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Kimberly-Clark Corp's Net Earnings Higher

Profit For First Six Months of Current Year Amounted to $1,527,000 Compared With $1,366,259 In Corresponding Period of 1929—Net Earnings For June Quarter Totalled $832,468 Against $811,486 In Second Quarter of Preceding Year First Half Year Earnings Equalled $3.05 a Share

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 21, 1930.—In the face of unfavorable reports by many concerns in the present business situation, the Kimberly-Clark Corporation, Neenah, Wis., has emerged from the first six months of operation with earnings higher than a year ago.

Net earnings were $832,468, equal to $1.66 a share on common stock, in the second quarter of 1930, against $811,486, or $1.62 a share, the same quarter last year, and $694,932, or $1.39 a share, after preferred dividends and other charges, the first quarter of this year.

For the first half of this year, the net comes to $1,527,000 or $3.05 a share on 499,800 shares, compared with $1,366,259, or $2.73 a share the corresponding period of 1929. In all of 1929 the net was $3,272,615, after preferred dividends and other charges, equal to $6.54 a share on 499,800 shares, against $2,154,663 in 1928, or $4.39 a share on 490,000 shares.

Government Pulpwood Contract Protested

Government pulpwood contracts in Southern Colorado are the object of a protest filed by the Combined Locks Paper Company, Appleton, Wis. The company objects to the awarding of a contract amounting to $5,438,000 to the International Paper Company, New York, according to Henry W. Toll, attorney for the Combined Locks Company. He declares that the Combined Locks Company's bid on 2,000,000 cords was higher than that of the International, and that the government should let two contracts instead of one, granting the pulpwood purchase to each for the quantity on which the bid was highest.

Federal Forest Proposed for North Wisconsin

Establishment of another federal forest in Northern Wisconsin as a means of conserving timber is proposed by representatives of Price, Ashland and Sawyer counties and of large lumber companies. The plan is to make a survey of all tax-delinquent lands in the cutover areas and establish a tract of 275,000 acres to be offered to the government for purchase. Authorization already has been given for the establishment of federal forests in Wisconsin totalling one million acres, and this new area would be added to what already constitutes government preserves. The Nekoosa-Edwards Paper Company has its reforestation areas next to these tracts and it is believed the entire region could be placed under federal supervision and fire protection.

H. Basil Wales has been appointed by Earl W. Tinker, regional United States forester, as assistant in charge of the office of forest management. Mr. Wales will assume direct charge of the timber work on national forest areas in Wisconsin, Michigan and Minnesota. He also will assist in supervising the work of growing and harvesting timber on the basis of permanent yield.

News of the Industry

The Collins Land and Lumber Company, of Rapid River, Wis., has sold its mill properties to Stone Anderson, of Ensign, Wis. The company had an annual output of 15,000,000 feet of lumber and supplied large quantities of pulpwood to Wisconsin mills. The mill has not been operated for the last three years but plans are being laid for resumption of activities.

Paper mill executives are supporting the annual convention of the Great Lakes Harbor Association, which meets at Green Bay August 7 and 8. Representatives from many states will be present to hear a varied program on development of transportation by water. The Great Lakes-St. Lawrence Waterway, which will mean much to the paper industry as well as others, will be one of the major subjects of discussion.

Rumors that the Falls Manufacturing Company's paper mill at Oconto Falls would not re-open were set at rest by G. Cota, of that company, in an address made before the Kiwanis Club of the local city. He said overproduction had made it necessary to suspend operations, but that the shutdown was only temporary. He declared that the mill could shift to other products than kraft paper if necessary but was optimistic about an early return to production.

The DePere Paper Manufacturing Co., DePere, Wis., has requested a tax reduction from the DePere municipality. The mill is assessed at $55,000 at present, and the company desires this cut to $20,000 so as to make the valuation equitable. The board of review is considering the proposals.

To Manage Perkins Tissue Mills Ltd.

[FROM OUR REGULAR CORRESPONDENT]

HOLYOKE, Mass., July 22, 1930.—Wilson G. Brockway of South Hadley who has been head of the sales department of the American Tissue Mills, Inc. has assumed the duties of manager of the Perkins Tissue Mills, Ltd., the Canadian branch of the American Tissue Mills. Mrs. Brockway will leave soon to join her husband. Mr. Brockway has been with the American Tissue Mills, formerly the Japanese Tissue Mills, for about 30 years.

Demand for Paper Improving in Philadelphia

Increased Volume of Orders Being Received Indicates Advent of Better Times for Local Paper Trade—Number of Inquiries Around Attributed to Fact That Consumers Stocks Are Low —Fine Paper Manufacturers On Full Time Schedule

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., July 21, 1930.—Many paper merchants are looking for substantial improvement in the paper market in the coming months for there is ground for belief that business has already turned for an upward rise, as continual and gradually increasing orders would indicate the advent of better times for the industry. Convinced that the coming month was bound to witness the revival of demand many paper merchants have taken early vacations and since the Independence Day holiday heads of firms have been absent from the city and staffs depleted by those who are taking the summer vacations. Those merchants who have remained at home report marked improvement in small lot orders and growth of demand among larger consumers now looking ahead to the coming Fall revival of business generally. There are more frequent inquiries from customers who are looking ahead in their paper requirements for the autumn and while cautiousness is indicated in placing purchases at this time by ordering only for immediate needs these inquiries would indicate that consumers' stocks are low and that volume shipments may be made later in the season.

Manufacturers of fine paper who heretofore have been operating on a five-day week have extended schedules to full time. Like the consumers dealers are placing orders only for present requirements and the mills have the same problem of growing hand to mouth buying to meet. It is believed that more normal conditions will prevail in the coming month as manufacturers look for broadening of business at that time. There are, however, sufficient small lot orders on hand at present to continue the present schedule of production for the next fortnight. Better grades of paper and specialties are the most active of lines in both fine papers and in wrapping paper specialties. Board manufacturers with converting plants also report better demand but with prices holding to the bottoms of the past six months. While summer operations are slowly extending, the mills are giving the usual attention to overhauling old units and installing new devices that will fit the plants for the revival of demand in the paper industry later in the season. Although there will be no great extension in the matter of paper making machinery new electrical devices are being added to mills already established and to newer units which will be in operation in the Fall.

While there has been a sudden demand for the better grades of paper stock within the past fortnight the common grades are draggy. The rag market has become a listless affair with dealers and mills showing scarcely any interest towards the preparation of stocks for future consumption. Local rag dealers state that they cannot conduct business on a profitable basis and as warehouses are well loaded with accumulation of common rags they are refusing to buy more. The quotatons are made by the mills rather than by the merchants. All available supplies of the better grades of paper stock are sold to the manufacturers as readily as they are secured by the wholesalers and there is a decided shortage of ledgers, book papers, white shaving and writings. Prices are firm at low levels.

Wholesale Paper Stock Men Hold Outing

In the attractive woodland surroundings of the Kugler Mohican Club at Morris, on the Delaware, 54 associates of the Wholesale Waste Merchants' Association of Philadelphia, joined in the annual outing held last Thursday. Throughout the day there were many happy diversions in the program of outdoor activities, including the baseball contest between the Rag Division and the Paper Stock Merchants who tied in a pick-up game staged on the diamond adjoining the Club. Other pastimes enjoyed were tennis, quoit pitching, volley ball and golf, all played on the spacious grounds in the cooling breezes of the Delaware and on a balmy day which gave to the players an opportunity for informal fellowship in the absence of a regular sporting program. In the evening there was served in the Mohican Club dining room one of the best dinners ever set at this famous eating place and with tender planked steak made more appetizing by seasonable vegetables fresh from the farm lands abounding the Club and topped by deliciously concocted desserts the feast that was set was truly enjoyed as the best menu ever furnished in these summer gatherings of the trade. At the dinner William J. McGarity, Sr., was toast master and enlivened the repast by his cheery words of greetings to his fellows. Those who were on the Entertainment Committee were William L. Simmons, Sr., John Simmons Sons' Company; William J. McGarity, Sr., Penn Paper and Stock Company, and Charles J. McNichol, of P. De Santi & Co.

Curtis & Bros. Modernize Mt. Holly Mill

Curtis & Bros, now proprietors of the Mt. Holly mills at Mt. Holly Springs, Pa., with executive offices located in the Public Ledger Building, and operating mills at Newark, Del., have planned to equip the Mt. Holly plant with new electrical units in the first step of modernizing the mill. There is being installed in the mill a variable alternating speed reduction motor with direct current characteristics which will be used to drive the paper machine. The Mt. Holly mills are now being devoted to the production of high grade bonds, ledgers and specialties. The new drive is known as an alternating current BTA-321 speed reduction motor and is made by the General Electric Company.

New Boiler for Lang Mills

New boiler equipment is being added to the power plant of the John Lang Paper Company mill, at Gloucester, N. J., where a Badenhouser boiler is now being installed in addition to the other equipment used in the manufacture of roofing papers and felts. The Lang paper mills recently added its own saturating equipment as another innovation since its removal to Gloucester from its former site in this city at 24th and Race Streets. Until this new saturation plant was added the firm, which has been in business for more than forty years, had its saturation work done elsewhere.

Paper Manufacturers Co. Producing Gummed Papers

Complete equipment for the manufacture of gummed papers has been installed in the converting plant of the Paper Manufacturers Company, Inc., at Fifth and Willow streets, where advanced and most modern mechanical units have been obtained for speedy handling of special orders and for production of a general stock of gummed papers of all kinds and sizes which will be kept on hand for customers and for the trade. The installation of units has been taking place over a period of several months and is now completed. The first products to be produced by the firm are gummed sealing tape and stay paper, sample rolls of which will be sent to the trade. Strictly No. 1 Kraft and highest quality of animal glue only will be used in the manufacture of these products, as announced by President Frank A. O'Neill of the company, who sent out word of the completion of the Gummed Paper Manufacturing Department last week. The firm states that

having specialized in the manufacture of small roll products for over 25 years, this latest development in gummed papers is a logical one and in the latest products the same high standards will be maintained. In announcing the opening of the gummed paper department the firm states that in addition to the sealing tapes and stay papers, it is the intention to manufacture a complete line of flat gummed papers, sample of which the company hopes to submit in the near future. The Paper Manufacturers Company, Inc., occupies a large structure extending a complete city square, a seven-story building built shortly after the World War, and adjoins a railroad siding. It is one of the best equipped paper converting plants in the city and has a modern warehouse with excellent shipping services for the handling of orders with despatch. The company has been engaged in the wrapping paper, specialty and small paper roll business for quite a number of years and is one of the largest concerns of its kind in this section.

Armstrong Cork Co. Opens Board Mill in Florida

An additional division to the business of the Armstrong Cork Company, whose main offices and plant are located in Lancaster, Pa., has been placed in operation in Pensacola, Fla., where a board mill has been built and is now devoted to production of an insulating and wall board used for sheathing purposes. The new mills are known as the Armstrong Newport Company and a complete paper making equipment for board production has been placed in operation for the manufacture of this product which is made of wood fiber. The new mills have been equipped with a General Electric sectional drive on the board machinery. The new board product is used for and is manufactured as plaster board of wood fiber foundation, and is now ready for the paper trade and building industry, having recently been placed on the market following the completion of building operations on the Florida site. It is conducted as a subsidiary of the Armstrong Cork Company.

C. T. Elliott, Jr., Representing Bennington Wax Paper

C. T. Elliott, Jr., has taken offices in conjunction with his father, C. T. Elliott, Sr., in the Fidelity-Philadelphia Building, Broad and Walnut streets, and is representing the line manufactured by the Bennington Wax Paper Company, Bennington, Vt. The elder Elliott represents the Bayless Pulp and Paper Company.

National Waterproofing Co. Makes New Waxed Paper

The National Waterproofing Company, with offices in the Drexel Building and plant in Camden, N. J., has sent to the trade samples of its newest of waxed products. The new paper is called the "Bo-Kay" waxed tissue and is a deluxe waxed tissue for discriminating florists, food products and confectionery manufacturers. It is a variegated product with beautiful rainbow colors that harmonize with floral hues and can be matched with all tints. The new product is sold only through paper jobbers. There are eight designs to the new variegated cloud effects in several combinations of colors. The papers are sold in stock sizes of 24 x 36, ream wrapped, flat and with 25 reams to the case of shipping weight of 375 pounds.

Sylvester S. Garrett Affiliations

With its long lineage of associates in the paper industry of this section, from the pioneer days of the trade down to the present generation, the Garrett family is assured of continuance of affiliation with the paper making industry through further connection by descendants of Sylvester S. Garrett, head of the firm bearing his name at 259 South 3rd street. Mr. Garrett has taken into the firm for educational purposes in the fundamentals of the paper trade and its business his son, Sylvester S. Garrett, Jr. and his daughter, Miss Helen T. Garrett, both students at Swarthmore College, who this summer will be given their first training in the paper industry during the vacation days. The young man, who is just nineteen years old, is a student in scientific subjects at Swarthmore while his sister, who is one year older, is specializing in English and literature and both will return to college in the Autumn, through continuing to learn more about the paper trade by practical contact in off study hours. The Garrett family has been associated with paper making here since Colonial days, several members of the family still being linked with the trade in this section of the country. The father of Sylvester S. Garrett, Sr., was founder of the Garrett Buchanan Company and of the C. S. Garrett Company, and his ancestors were owners of the several Garrett paper mills operated in locations in and near Philadelphia and in New Jersey and Delaware.

William R. Maull Leaves Hospital

Vice-president and General Manager William R. Maull, of the Dill and Collins Company, who has been confined to the hospital following an operation for appendicitis, has recovered from his ailment and last week was able to leave. He had been a patient at the Chester County Hospital for the past two weeks leaving last week for his home where he will spend a few weeks recuperating before returning to his duties at the Dill and Collins mills at Richmond and Tioga streets. Mr. Maull is one of the best known of paper mill managers in this section and has been connected with the Dill and Collins mills for more than a score of years.

Paper Mill Relic Presented Franklin Institute

A "nigger head" part of the water wheel of the first paper mill to be built in America—that of the old David Rittenhouse mill, formerly located on the Wissahickon Creek at the intersection of Rittenhouse street, was presented to the Franklin Institute last week by S. Edgar Trout, historian of this city, and a surviving director of the Centennial Exposition. This piece of wood, the size of a human head, will be seen later in the Franklin Memorial Museum with the paper industry permanent exhibit which is to be erected on the Parkway, where it will be shown as part of a turbine engine used for paper mills in Revolutionary times. There were two "nigger heads" in the Rittenhouse Mill, but only one has been preserved. These circular blocks of lignum-vita wood sunk eight or ten feet under ground were connected with the base of the grinder shafts. The water wheel was connected by wooden shafts to the stone grinders which revolved on other shafts. The original "nigger head" was preserved by Mr. Trout in 1898 from a paper mill on the Conestoga Creek at Eden, six miles from Lancaster, where it had been taken. This mill was used by the Continental Congress to manufacture "greenback" paper used by Benjamin Franklin in printing Continental money. The David Rittenhouse mill was one of the first to use water power and before the application of this form of motivation grinding of wood pulp and of grains was done by horsepower. In 1870 the Rittenhouse mill came under control of the Park Commission and the "nigger head" could not be found, but later was discovered in the old Eden Mill in Lancaster County.

Paper Service Producing Own Fancy Box Covers

Fancy papers used for covers by the box manufacturers and the printing trades are now being produced exclusively by American manufacturers for the Paper Service Company, 28 North 6th street, which makes a specialty of this class of paper goods. The firm is placing on the market its own line of Metallic and Pall Mall papers which include designs in modernistic arts and in handsome metallic backgrounds and effects combined with colors or in metal papers or plain and embossed designs. Heretofore the Paper Service Company imported a large percentage of these papers from abroad but is now patronizing American manufacturers having its brands made in this country, and is able to secure equally as effective designs and paper grades as those made under foreign production. The 1930 line now being marketed are colorful and entirely original designs of the advanced modern American craft of paper making. The firm is now ready with its Christmas holiday fancy box covers for use in set up box making.

Ontario Paper Mills Only Moderately Active

Very Few Plants Operating At Full Capacity At Present and Orders Are Practically Up to Machines—Fine Paper Mills Are Busier Than Those Manufacturing Coarse Papers—Several Book Paper Plants Have Some Business Booked Ahead

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, Ont., July 21, 1930.—The month so far has proved a "spotty" one as far as paper sales are concerned and wholesalers and mills alike will experience a lean month as a whole. Business has undoubtedly been affected by the Dominion election campaign which finds its culmination on July 28 at the polls. With the battle of the ballots out of the way and the holiday season terminated there should be a return to normal business although no great improvement is looked for until the fall months arrive. In the meantime, paper merchants will likely have to be content with a small volume of sales. There is, of course, a certain amount of paper selling, but consuming sources as a whole are buying lightly and in some cases from hand to mouth. The printing trade, for instance, is quiet and is making only comparatively small requisitions for stock. Quietness in trade is being experienced in practically all commercial lines and with office staffs depleted the use of paper has diminished in volume. Demand for fine papers has dropped off and coarse papers are not being sold to the retail and wholesale trades by reason of general quiet conditions in those lines. The paper box trade and the sale of fancy paper for box linings have similarly been affected.

There is a fair degree of activity in the manufacturing end of the paper trade, although very few of the plants are operating at capacity and orders are pretty well up to the machines. Fine paper plants are busier than those manufacturing coarse papers, and in the line of book paper several of the mills have some nice business booked ahead. Demand for bonds, writings and ledgers is comparatively light and the call for light weight papers has also fallen off. The distributors, rather than the manufacturers of the light weights, have been adversely affected by the situation in tissues and toilets for a considerable amount of cheap import stuff has to be contended with and this has been coming in more or less steadily for some months. The coarse paper market continues quiet, although a considerable quantity of kraft is being sold to envelope manufacturing firms who in turn are getting some good business through special direct mail advertising campaigns designed to stimulate paper sales.

Marriage of Archibald Fraser

The Ontario pulp and paper trade was interested in the announcement a few days ago of the marriage in London, Eng., of Archibald Fraser, which took place in the British metropolis on June 25. He and his bride are now making a tour of Europe and will return to Edmundston, N. B., at the end of July where they will take up their residence. Mr. Fraser, besides being president of Fraser Companies, Ltd., the parent Fraser organization, is president of two subsidiaries, Restigouche Company, Ltd., and the Fraser Paper Company. He is also a director of the Holland Paper Company, Ltd., with plant at St. Jerome, Que. Outside the pulp and paper and lumbering industries, he is a director of the Royal Bank of Canada and the New Brunswick Telephone Company. Until last year he made his home in Fredericton, N. B., where the Fraser organization was born, and headed by the late Donald Fraser, father of Archibald and Donald Fraser, the current president and vice-president of the Fraser interests. The Fraser pulp mills are at Edmundston, Millbank and Atholville, the latter being a new plant.

Toronto Man Heads Big Corporation

J. H. Gundy, of Toronto, who is widely known in pulp, paper and financial activities throughout the Dominion, has been elected president of the Canada Power and Paper Corporation. Mr. Gundy succeeds George Chahoon, Jr., who asked to be relieved of the presidency. The latter nominated Mr. Gundy as his successor and the choice was immediately ratified by the directors of the organization. Mr. Chahoon, who is a national figure in pulp and paper circles, has been associated with the news print industry since its infancy and is a former president of the Laurentide Company. He has seen 28 years of service and stated that he desired to be relieved of the responsibilities of president of the company, which is the largest producer of news print in Canada. Mr. Chahoon will remain on the company's board of directors. Mr. Gundy, the new president, has been intimately identified with the affairs of the Canada Power and Paper Corportation since its formation, in which he took a prominent part.

Thunder Bay's Pulpwood Record

Thunder Bay district in Ontario cut its record harvest of pulpwood during the year ending June 30, 1930, the total running to 542,087 cords. The cut exceeded by nearly 100,000 cords the previous high water mark of 451,000 cords in 1927-28. The pulpwood is valued at over $4,500,000. It is stated that a cord of pulpwood as delivered at the mills in Port Arthur is worth about $10.50 per cord. Of this season's cut, about 392,000 cords were, or will be, exported, and 150,000 cords is for delivery at the Port Arthur and Fort William mills.

Notes and Jottings of the Trade

A large addition has been made to the plant at Courtauld's, Ltd., Cornwall, Ont., a company that was organized a few years ago to manufacture artificial silk, using chiefly rayon pulp from the Kipawa mill of the Canadian International Paper Company. One of the features of the addition to Courtauld's is the installation of new machinery which requires a unit of two persons only, as compared with seven under the old type, thus resulting in a considerable saving in labor costs.

C. N. Candee, who has been mill superintendent at the Merritton plant of Alliance Paper Mills, Ltd., is relinquishing his position with Alliance and will take an important position on the technical staff of the Howard Smith Paper mills at Montreal. Mr. Candee has many friends in the pulp and paper industry in the Niagara Peninsula who will regret his removal.

Robert Hall, of the Canada Paper Company, Ltd., Montreal, and formerly with the Howard Smith Paper Mills Toronto office, was a business visitor in Toronto last week.

Provincial Paper, Ltd., has just issued a folder containing a very useful reference list of its various types and grades of papers, with a beautiful illustration on the cover under the title of "The Pathfinders," reproduced on Provincial's Paragon Offset.

A. W. Gall has been appointed office manager of the Toronto office of the Abitibi Power and Paper Company, Ltd., succeeding in that post L. B. Shipman, who takes the position of assistant secretary of the company.

A. P. Costigane, secretary-engineer of the Ontario Pulp and Papermaker's Safety Association, has gone on a visit of inspection to a number of pulp and paper mills in the Port Arthur district. He expects to be away for about two weeks.

Wilson Ney, Charles Shaw, and Douglas Kipp, have been transferred from the Gatineau mill of the International Fibre Board Company, Ltd., to the plant of the company at Midland, Ont.

Charles V. Syrett, head of the C. V. Syrett Paper Company, wholesale paper merchants, Toronto, is spending a vacation at

Britania. On his return Vice-president Meredew will take his holidays at Fenelon Falls.

Fred Hunt, of the Toronto office of the Howard Smith Paper Mills, is spending his vacation in the Kawartha Lakes district, along with his wife and child.

Widely known in paper circles in Toronto and Ontario generally through his connection with Rolph-Clark-Stone, lithographers, of which he is president, Frank A. Rolph has been elected president of the Imperial Bank of Canada, in succession to the late Peleg Howland.

H. C. Evans Goes With Cel-U-Del Corp.

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 21, 1930.—H. C. Evans, who for the past sixteen years has been general manager of the Alton Box Board and Paper Company, of Alton, Ill., has severed his connection with that concern and has become interested in and accepted the vice-presidency of the Cel-U-Del Corporation of Chicago.

The Cel-U-Del Corporation was recently organized to take over the business and manufacturing plant of the Harbaugh Process Company of Chicago, which has developed a new chemical product of much value to the paper industry invented by Dell F. Harbaugh. This had been introduced under the trade name "Cel-U-Del" and as this has become so well known it was decided to make the corporate title correspond to the shorter trade name.

Mr. Evans states that for the past year he has been using Cel-U-Del at the Alton plant with a very marked degree of success and has found it to be of great utility in the manufacture of box boards and other grades of paper products manufactured in that plant and elsewhere. In fact he has considered it of such merit in the paper industry that he has joined the Cel-U-Del Corporation and will be in charge of the sale of their products.

Cel-U-Del was put on the market by the Harbaugh Process Company about eighteen months ago, and has enjoyed an ever-growing demand by the paper mills. Its utility has been found to be principally three fold—as a chemical in the digester cooking of fibers, such as straw, flax, hemp and wood pulps; as a chemical used in the beaters to impart strength to finished sheets, also in conjunction with size to produce a water proof sheet on such grades as kraft and other wrapping paper, bag stocks and the like; and as a chemical for waste paper conversion in the breaker beaters for the utilization of waste paper without the addition of strengthening raw pulps. It is also used in the manufacture of water proof specialties and insulating papers, and for other purposes.

The Cel-U-Del Corporation is marketing its products under the trade names of "Cel-U-Del," for the strengthening of fiber pulps and the formation of tough sheets; "Cel-U-Cize," a sizing compound for water proofing and finishing the sheet; and "Cel-U-Cook," for cooking of straw, woods and other pulp forming materials in the digesters of paper mills and pulp plants.

These chemicals have enjoyed a continuous use over a period of the past year in several of the leading paper mills of the country, and are standing on their own merit. Cel-U-Del is effecting for these mills a saving in their cost of manufacture, also giving them an improved formation of their papers, greater strength, pliability, greater bending and folding qualities, and superior finish.

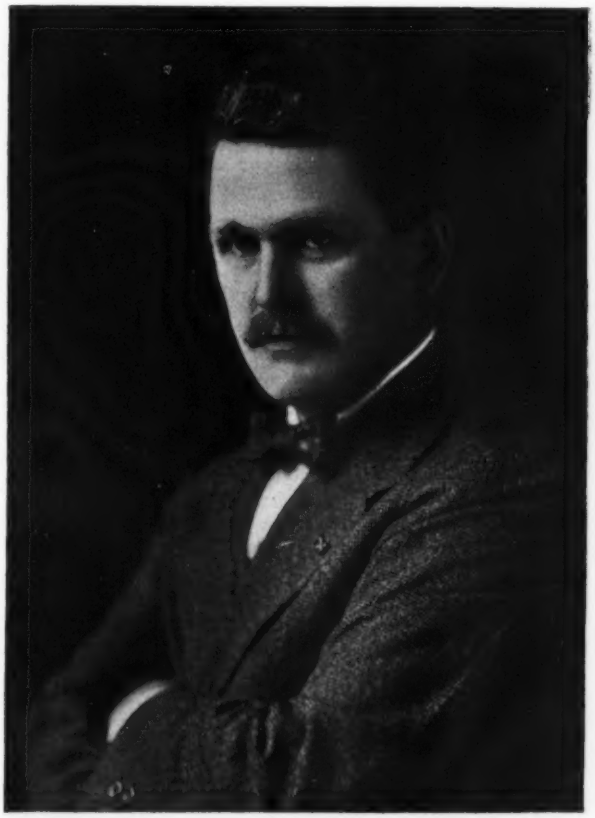
Dr. H. P. Baker Elected Dean of Forestry College

[FROM OUR REGULAR CORRESPONDENT]

SYRACUSE, N. Y., July 18, 1930.—Hugh Potter Baker was elected Dean of the New York State College of Forestry, Syracuse University, by the Board of Trustees today, to succeed the late Franklin F. Moon. In the absence of former Governor Alfred E. Smith president of the board, former Congressman John R. Clancy, of Syracuse, vice president, presided. Dr. Baker's name was presented to the board by a special committee headed by Chancellor Charles W. Flint, Syracuse University. The committee composed of the Chancellor Frank P. Graves, Commissioner of Education; Edward Kelley, of Syracuse, after canvassing the forestry educational field thoroughly, submitted the qualifications of the various candidates.

Dr. Baker, at present, is manager of the Trade Association Department of the United States Chamber of Commerce, Washington, D. C. Dr. Baker was the first Dean of the College, having served from 1912 to 1920. He laid the foundations of the present institution and its subsidiaries, the Ranger School at Wanakena, and the Sophomore Summer Camp at Cranberry Lake, as well as several of the experimental forests that now belong to the College. This pioneer work involved innovations and advances in the educational field beyond the standards that had been set in the profession and proved prophetic of future development in forestry.

Dr. Baker became the executive secretary of the American Paper



DR. HUGH P. BAKER

and Pulp Association in 1920. Eight years later he associated himself with the Chamber of Commerce of the United States where he has been engaged since that time.

Dr. Baker received his Bachelor of Science degree, Michigan State College, 1901, Master of Forestry, Yale, 1904; Doctor of Economics, University of Munich, 1910. He served ten years with the U. S. Forest Service. Before coming to Syracuse he was professor of forestry in Iowa State College, 1904-07, and Pennsylvania State College 1907-12. He is a Fellow of the American Association for the Advancement of Science, Royal Geographic Society of London, American Geographic Society, Society of American Foresters and Society of Colonial Wars, Sons of American Revolution and Loyal Legion. He was a member of the second R.O.T.C. at Fort Sheridan, Ill. 1917, served with the 46th Infantry as a member of the general staff and is Major of the Officers Reserve Corps.

Chicago Paper Market Conditions Unchanged

While Demand for Practically All Standard Grades of Paper Is Slow At Present, Local Distributors Are Generally Optimistic Regarding the Outlook For Early Fall Business — Fine Paper Section Continues to Exhibit Strong Undertone

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., July 21, 1930.—Although conditions are practically unchanged there seems to be a somewhat better feeling in the Chicago market, largely according to reports, because of the outlook for early fall buying. The vacation season has started in earnest and demand is very slow at this time but reports of stocks on hand seem to indicate that some necessary placing of orders around Labor Day and shortly thereafter will cause most lines to become busier. Newsprint runs at between 70 and 75 per cent capacity at the mills, according to representatives here, with exhausted advertising budget and nearly completed schedules causing a slowing up in demand that is largely seasonal. Fine papers and book and cover papers have continued to hold on to a fairly good run of business through a continuation of direct mail effort on the part of many houses now definitely attempting to build up sales by aggressive methods.

Kraft papers are reported little changed with the present low prices and somewhat stagnant conditions expected to drift along until Fall. The board market has slowed up and the opportunity may present itself, say reports, for this market to try and improve its price situation. Tissues are seasonally on the decline. Ground woods are also reported slow, though stable. In the waste papers the low grades show no activity though higher grades demonstrate some strength.

Paper Salesmen's Golf Outing

The Chicago Division of the Salesmen's Association of the Paper Industry held its third monthly golf event on Friday, July 18 at the Park Ridge Country Club and though the thermometer was popping around the highest figure for Chicago in a number of years a large group of members and their guests were right on deck for practically the entire day. Prize winners were as follows: low net, Jack Burrus, Albemarle Paper Company; second low, Gene Abell, Chicago Paper Company; low net first nine holes, Creighton Whiting, American Writing; low net second nine holes, Ed. Shaeffer, Missisquoi Pulp and Paper; low net foursome, Ray Russell, Erne Brown, E. M. Brown and Phil Howard; Low putts, Bill Tilden, Eastern Manufacturing; high gross, Mickey Wesley, Rhinelander; high gross foursome, Frank Prentiss, Hollingsworth & Whitney, Judge Custer, Mackie Paper of Milwaukee, Al Weisner, Bermingham & Prosser and Creighton Whiting of American Writing; blind bogey, George K. Gibson, Mosinee, and a special "two shot" prize for low gross won by Warren Moore of the Brown Company. The members and guests also enjoyed a luncheon and dinner. Other sidelights on the days outing—Ernie Brown creating competition for Jim Coy in his singing act; Walter Sheehan's special approach and putting contest; Jim Coy's versatility in playing both bridge and golf and a lot of other things that are censored. Walter Sheehan, treasurer of Missisquoi, should have received the prize for coming from the farthest point for the entertainment.

Sutherland Paper Co. Progressing

Unfilled orders of the Sutherland Paper Company, with sales offices at 66 East South Water Street, Chicago, are the largest in the history of the business, according to L. W. Sutherland, president. Statements issued on July 17 show all departments running at capacity on a twenty-four hours basis. For all the six months to June 30, the net profits of the Sutherland Paper Company amounted to $180,000 after all charges including federal taxes, equal to 60 cents a share for the period on the company's 300,000 shares of common stock outstanding. This compares with a net of $155,000 or 51 cents a share for the common for a similar period in 1929.

Cutler-Hammer Acquires Schweitzer & Conrad

The common stock of Schweitzer & Conrad, Chicago manufacturers of high voltage equipment, was acquired by Cutler-Hammer, Inc., on July 1, according to an announcement which is of interest to the paper industry. The Chicago concern will continue to act and operate independently and the only change in personnel will be in the election of Beverly Worder, president of Cutler-Hammer, to the presidency of the Schweitzer & Conrad organization. Mr. Schweitzer and Mr. Conrad will maintain their connections with the firm, serving as members of the Board of Directors and as consulting engineers.

News of the Trade

A big entry list, lots of prizes, a splendid luncheon and a big dinner in the evening are the "trimmin's" for the annual golf outing of the Chicago Paper Association which gets under way on Thursday, July 24, at the Medinah Country Club. According to William J. Shapland, of the Fred Rentz Paper Company, the biggest crowd in the history of the events will be on hand to try out the course, compete for the prizes and enjoy the "feed."

"No Guessing When You Use Atlantic Bond," seems to be one of the most interesting of the many original and attractive mail specimens sent out by the Eastern Manufacturing Company featuring Atlantic Bond. This, and other specimens, are of genuine interest to the letter head user. The LaSalle Paper Company is the Chicago distributer for the eastern firm.

Stockholders May Enjoin Union Bag

[FROM OUR REGULAR CORRESPONDENT]

GLENS FALLS, N. Y., July 21, 1930.—The equipment of Mill No. 5 of the Union Bag and Paper Company has not been removed by the purchasers as yet because the stockholders' group are reported to have secured an injunction prohibiting the removal. However, officials claim that the only reason why the machinery has not been removed is because the new owners have not yet decided to do so. The paper machine in the mill was recently purchased by a firm in the South which has already announced plans for dismantling it before shipping it to one of its branches.

It is reported that a certain group of stockholders have joined together in order to take legal action against the company because of the recent sale of its power rights to the New York Power and Light Corporation and while it is said that an injunction had been secured by Boston attorneys the officials at the local plant declared that they had not been advised of any such proceedings. The first intimation that a certain group of stockholders planned to protest the action of the company in selling its properties came a few weeks ago when stockholders in this city and vicinity received communications from a law firm in Boston urging them to join the protesting forces in an investigation of affairs and the working out of a plan for profitable operations.

During the past week Jere Moynihan was presented with a gold watch by the foremen and office employees of the company prior to leaving for Flushing, L. I., to take charge of the Columbia branch of the Union Bag and Paper Corporation. He had been connected with the Hudson Falls plant for several years in the capacity of resident manager and his promotion is conceded to be a deserving one.

Outlook For News Print Industry Is Obscure

Two Additional Machines to Start Operation at Dalhousie Plant of International Paper Co., At Early Date, Will Intensify Prevailing Unhealthy Operating Conditions In News Print Industry—Recent Big Mergers Have Improved Situation

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., July 21, 1930.—With a general election campaign in full swing in Canada, little is being talked of here but politics. Nevertheless there has been some discussion as to the effect of the decision of the International Paper Company to bring into operation at an early date two additional machines at the Dalhousie plant in New Brunswick, thus doubling the capacity of that plant. Discussing this subject, the *Financial Times* of Montreal, says that the new machines "will intensify the already unhealthy operating conditions in the news print industry." It adds:

"It is pointed out by interests close to International that the bringing in of the two new machines is the result of pressure brought to bear on the company by the Provincial Government of New Brunswick in accordance with the terms of the contract when the necessary timber limits were granted. This explanation is advanced to offset the charge made in some quarters that the increasing of capacity by International is a move towards further embarrassing the Canadian producers.

"Hopes for some improvement in news print conditions which had been entertained towards the end of last year have been fading steadily and the immediate outlook for the industry is probably more obscure than at any time since the sharp reversal of conditions which developed in 1927. The business recession which has been in evidence since the middle of last year has had its effect upon demand for news print; the bringing in of the Dalhousie and Mersey Mills last year added largely to mill capacity. Cost reduction, which has been given close attention since 1927, has reached a point where further economies are difficult if not impossible of achievement; anticipation of an early upward revision in market price seems unlikely to be realized; while the threat of keen competition from American interests in new directions is a disturbing element.

"Mergers, which have been consummated on a large scale in the past two years, have saved the situation and staved off what would undoubtedly have developed into a disastrous war in the industry. Other mergers, looking more towards diversification of production, appear to be in the making and should help considerably.

"Producers are now bending their best efforts towards building up new markets for their output abroad, and, on the measure of their success in this direction will depend the transfusion of new life into the industry which has been laboring in recent years under tremendous handicaps.

"The long term potentialities for the industry remain as great as ever and, as a matter of fact, have been enhanced by the sounder business methods which have grown out of the operating difficulties of the past three years, but the immediate outlook is anything but encouraging."

Report Brompton Earned Full Dividend

Operations of the Brompton Pulp and Paper Company, a subsidiary of the St. Lawrence Corporation, are understood to be at a satisfactory level. Unsettled conditions in the news print industry have not, it is stated by interests close to the company, resulted in its being unable to fully earn dividend requirements so far this year.

The New MacLaren Mill

The Buckingham mill of the James MacLaren Company, which was expected to come into production in August with a capacity of 250 tons of news print per day, may not be put on a producing basis till some time later in the year, according to reports here. Meanwhile it is stated that an arrangement has been entered into with the St. Lawrence Corporation for the marketing of its output.

N. S. Pulpwood Exports

According to news from Halifax, over 200,000 cords of pulpwood has been exported to the United States from Nova Scotia this year, which is a slight increase over the amount exported in the same period of 1929, and higher than in any previous year.

From Cumberland and Colchester counties, shipments are sent to Maine for the Lincoln Pulpwood Company. From points along the Atlantic shore, Bridgewater, LaHave, and Sheet Harbor, big shipments are being made by the Hollingsworth-Whitney interests, while from Cape Breton, the Oxford Paper Company is probably the greatest exporter of pulpwood. The Atlantic Pulpwood Company, which was held up for some weeks due to an unusually dry spell, has started shipping from its boom at Indian River, N. S.

Boston Paper Market Spotty

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 21, 1930.—In the aggregate, the volume of business of Boston paper houses was apparently less for the last week than for the previous week, although some firms have continued to be as active as previously. Quiet may be easily ascribed to seasonal dullness, but some feel it is worse than the period warrants. Most orders are for immediate delivery, showing that buyers have little stock on hand from which to draw. Boston houses have not been affected to any great extent, if at all, by the reduction in the price of books of fiction on the part of New York publishers so that they are offered to the public at $1 compared with a former figure of $2.50. At least some of the fine paper merchants here do not handle the kind of paper used in making these books, but more of a finer grade.

The demand for wrapping paper is, in general, no better. One merchant says it is "just fair." Another dealer whose firm transacted a rather lively business during June, finds a dull July so far. Box board is quiet on standard lines although there are indications that greater activity will develop by the middle of August.

In paper stock it is a buyers' market. Mills "are using a little something all the time," and realizing the situation are taking advantage of it. "There is just one favorable thing," says a dealer in discussing the situation. "New York prices on mixed papers seem to be improving a little and that is bound to affect this market to a certain extent, but prices here were never so low as they were in New York." Boston values remain unchanged.

Direct Reading Humidity Recorder

The L & N Relative Humidity Recorder described in Bulletin No.. 880 is a new departure in recording humidity. The usual psychrometric device measures the temperatures of wet and dry bulb thermometers in a current of air, but the observer must find the corresponding humidity from a table or chart showing the relationship. The unique feature of the instrument described in this bulletin is that it records relative humidity directly. The manner in which this is accomplished is explained in the text. This bulletin may be obtained by addressing the Leeds & Northrup Company, 4901 Stenton avenue, Philadelphia, Pa.

Obituary

George A. Whiting

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., July 21, 1930.—There was lost to the paper industry on July 17 at Neenah, Wisconsin, one of the most prominent and picturesque industrialists through the death of George A. Whiting, president of the George A. Whiting Paper Company, Menasha, Wis., and the Whiting-Plover Paper Company, Stevens Point, Wis. He is considered the last of the Wisconsin pioneers in paper manufacture and was a charter member of the American Paper and Pulp Association.

Mr. Whiting was 81 years old in June. His health had been normally good and he had been spending his winters regularly in Florida. He was taken ill two weeks ago at his home with bronchial trouble and showed symptoms of pneumonia. His condition was not regarded as critical and he was planning to

GEORGE A. WHITING

leave his bed within a day or two and use a wheel chair. A sudden turn caused his end, however. Burial was held at Neenah with the Rev. U. E. Gibson, pastor of Whiting Memorial Baptist church in charge. The church was built through his generosity. Rites at the grave were conducted by Kane Lodge of Masons, of which he was the oldest living member and master for four terms. Mr. Whiting is survived by his widow and one son, Frank B. Whiting.

Born at Gilboa, N. Y., in 1849, Mr. Whiting came west with his parents to Ripon, Wis., in 1854. He came to Neenah when 16 years of age and took up work in a general store. He later sold farm machinery. In 1872 he organized a company, obtained a water power site, and erected the Globe Paper Mill, later taken over by the Kimberly-Clark Corporation. In 1875 he purchased an interest in the Winnebago Mills and was secretary until 1882. He then engaged in a partnership with William Gilbert, of Chicago, under the firm name of Gilbert and Whiting, and built a one-machine mill where the present George A. Whiting Paper Company is located. In 1888 Mr. Gilbert retired and the business was conducted by Mr. Whiting individually until 1912 when it was incorporated and given its present name. In the meantime the mill had been enlarged and modernized. The mill was destroyed entirely in 1888 by an explosion and fire but was rebuilt immediately.

While his operations thus far had been at water power sites along the Fox river, Mr. Whiting also foresaw possibilities on the Wisconsin river. Accordingly he became associated with the South Centralia Pulp and Water Power Company, near Wisconsin Rapids, Wis., in 1888 as its president. He disposed of this property shortly and built a pulp and paper mill two miles below Stevens Point, where he had acquired control of several water power sites. This company was known as the Wisconsin River Paper and Pulp Company. He was president of this company until 1907, when he disposed of his interest.

Utilizing other water power sites, Mr. Whiting was instrumental in organizing the Plover Paper Co. at Stevens Point in 1893. The mill at that time was one of the largest and most complete in Wisconsin for the manufacture of the finer grades of paper. Mr. Whiting was its president from the start. In 1912 the name was changed to the Whiting-Plover Paper Company and has been one of the prominent industries of the locality all these years.

Among the many services rendered to the paper industry by this pioneering individual was one which solved serious aspects of the water power situation on the Wisconsin river. The flow of water was difficult to control and the power from this source was not dependable. Mr. Whiting therefore purchased seventeen dam sites on the upper river, where logging dams had been built. Seventeen companies were in existence and he was president of all of them. Later he merged them in the name of the Wisconsin Valley Improvement Company. By having these dams under unified control, the flow of water could be regulated all the way down from the original source at the northern Wisconsin lakes. The flow therefore was kept uniform and plenty of water was impounded in various lakes so the water could be released during dry seasons. This move greatly enhanced the value of all water power along the Wisconsin river and solved a big problem other mills.

Mr. Whiting organized the First National Bank of Menasha and the Citizens National Bank of Stevens Point. He also helped to establish a hotel and Country club at Stevens Point, both of which were named in his honor, the Hotel Whiting and the Whiting Country Club. He donated the land and field house for what is known as the George A. Whiting Athletic Field of Lawrence College at Appleton. The George A. Whiting Airport, between Appleton and Menasha, was named for him because of his gift of 100 acres of land. He also gave many cash donations to schools and other institutions and was known widely as a philanthropist. He served as mayor of Neenah for two years and was a member of the staff of the Governor of Wisconsin in 1888 with the rank of colonel.

Incidentally, referring to the formation of the American Paper and Pulp Association, Mr. Whiting on January 19, 1927, addressed a communication to Dr. Hugh P. Baker, the executive secretary, which read in part, as follows:

"I was present at the organization of the American Paper and Pulp Associaton in Saratoga in the fall or summer of 1878. If I remember correctly I was a member of the committee on organization. Mr. Plunkett was temporary president or chairman of the organization of the body, and I believe he was addressed as Mr. President at that time. The committee put in for its first president, William Whiting, of Holyoke. This I can verify from some ancient records I have kept. While my heart has always been in the association, when the association was new and I was young and in a new country and of course did not take active part in the association, but was rather what in my mind or judgment what I term a good payer, and a fair prayer for its success.

"In my judgment it has been one of the greatest helps to the industry that has befallen any industry in my recollection. I mean this in a broad sense. Its activities have brought together the dealer, consumer and manufacturer in a friendly unit. It has laundered out all of their imaginary troubles and some real troubles, and while it has hewed straight to the lines so far as prices are concerned since the Sherman Law (and I will say nothing of what happened before that became legal), it has

developed into a careful institution and has been a wonderful service to us all."

Edmund N. Huyck

Edmund N. Huyck, for many years identified with the paper trade, died in Rensselaerville, New York, on July 15. Death came to Mr. Huyck in his sixty-fourth year, after an illness of some months duration. Mr. Huyck for many years was president of F. C. Huyck & Sons of Albany, New York, manufacturers of paper makers' felts. He was born at Rensselaerville, New York, May 17, 1866. He was the eldest son of Francis Conkling Huyck, the founder of the business which now bears his name.

Upon his graduation from Williams College in 1888, Mr. Edmund N. Huyck entered his father's business. The firm name was changed to F. C. Huyck & Sons in 1894, when his brother, Frank C. Huyck, also entered the business. Upon the incorporation of the business in 1907, Mr. Edmund N. Huyck became president, which position he occupied until the latter part of 1929, when he became chairman of the board of directors. He was succeeded at that time as president by his brother, Frank C. Huyck.

Mr. Huyck had a wide interest in civic and educational matters. He was for many years, and at the time of his death, a member of the board of directors of the Albany Hospital, was president of the board of trustees of the Albany Medical College, and a member of the board of governors of Union University. Mr. Huyck, as president, reorganized the Chamber of Commerce of Albany, and also was the first president of the Albany Community Chest.

Mr. Huyck's interests were not alone city-wide. In 1914 he was a member of the State Housing Commission. At the time of his death, he was a member of the Advisory Committee of the State Fund for Compensation Insurance. He represented the felt manufacturers on the War Industries Board in 1918.

Shelton A. Hibbs

PHILADELPHIA, Pa., July 21, 1930.—Shelton A. Hibbs, president and treasurer of the Moore and White Manufacturing Company, manufacturers of paper making machines, died last Saturday at his home, Edgewood Road and Montgomery Avenue, from an attack of heart disease. He was 61 years of age. Mr. Hibbs who was born and educated in this city, and who was a graduate of the University of Pennsylvania, joined the Moore and White Company shortly after his graduation from college in 1889. He was a member of the Union League, the Art Club and the Merion Cricket Club. Surviving are his wife, Mrs. Laura Straus Hibbs and his mother, Mrs. Marie Eckfeldt Hibbs.

Mrs. G. H. Hedley

BRISTOL, England, July 8, 1930.—The many friends in the United States and Canada of G. H. Hedley, chairman of St. Anne's Board Mill Company, Ltd., St. Anne's Road, Bristol and of G. H. Hedley, Ltd., of Loudwater, will sympathize with him in the very sad loss which he has suffered in the death of his wife.

On Sunday, July 6, Mr. Hedley was motoring with his wife, when owing to the greasy nature of the road his car skidded and collided with a motor-omnibus. Mrs. Hedley received very severe injuries, which resulted in her death a few hours later. Mr. Hedley received minor injuries only, but he is suffering from very severe shock.

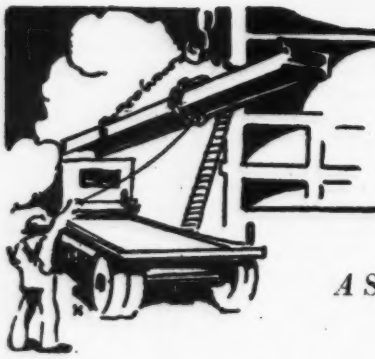
Box Board Production For May

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 21, 1930.—May production of box board, based on reports to the Department of Commerce by 97 firms operating 130 plants was 72.5 per cent of capacity, as compared with 73.9 per cent in April, 79.9 per cent in May, 1929, and 76.1 per cent in May, 1928. The following table presents a complete revision of data previously presented due to the inclusion of reports for additional concerns. The capacity data shown below vary according to the normal number of working days in each month:

Year and Month	Operation			Production			New Orders	Unfilled Orders (end of month)
	Inch hours		Per cent of	Short Tons		Per cent of		
	Capacity	Operated	Capacity	Capacity	Output	Capacity	Short Tons	
1928								
Jan.	11,649,300	8,094,821	69.5	311,725	205,795	66.0	201,932	82,657
Feb.	11,673,300	8,248,530	70.7	312,225	214,730	68.9	219,153	88,748
March	12,604,464	9,089,124	72.0	337,203	232,436	68.9	250,663	96,439
April	11,673,300	8,548,893	73.2	312,225	230,785	73.9	223,302	88,057
May	12,140,232	8,957,985	73.8	324,714	247,183	76.1	230,184	76,372
Total (5 mos.)	59,740,596	42,939,353	71.9	1,598,092	1,130,929	70.8	1,125,234	.....
June	12,140,232	8,630,030	71.1	324,714	236,099	72.7	236,077	80,834
July	11,673,300	8,334,531	71.4	312,225	206,246	66.1	211,152	82,325
Aug.	12,607,164	9,563,581	75.4	337,203	237,776	70.5	241,228	84,726
Sept.	11,206,368	8,644,556	77.1	299,736	231,324	77.2	242,028	89,907
Oct.	12,607,164	9,827,022	77.9	337,203	253,180	75.1	250,744	83,979
Nov.	11,673,300	9,096,130	77.9	312,225	245,713	78.7	252,859	94,969
Dec.	11,673,300	7,883,613	67.5	312,225	211,516	67.7	205,408	95,329
Total (year)	143,321,424	104,918,816	73.2	3,833,623	2,752,783	71.8	2,764,730	.....
1929								
Jan.	12,166,180	9,548,914	78.5	332,202	257,909	77.6	246,845	89,643
Feb.	11,230,320	8,661,380	77.1	306,648	233,103	76.0	233,832	89,936
March	12,188,644	9,641,580	79.1	333,424	263,252	79.0	269,179	98,016
April	12,188,644	9,495,901	77.9	333,424	256,486	76.9	256,400	99,610
May	12,188,644	9,641,050	79.1	333,424	266,484	79.9	251,625	88,048
Total (5mos.)	59,962,432	46,988,825	78.4	1,639,122	1,277,234	77.9	1,257,881	.....
June	11,719,850	9,012,771	76.9	320,600	233,164	72.7	223,723	73,330
July	12,188,644	9,227,606	75.7	333,424	244,318	73.3	244,510	76,091
Aug.	12,657,438	9,805,677	77.5	346,248	265,063	76.6	269,951	80,634
Sept.	11,251,056	8,745,015	77.7	307,776	242,032	78.6	249,553	85,866
Oct.	12,657,438	9,707,460	76.7	346,248	269,611	77.9	269,884	84,237
Nov.	11,681,450	8,689,622	74.4	320,175	241,780	75.5	218,499	66,725
Dec.	11,681,450	6,843,974	58.6	320,175	185,699	58.0	175,586	58,612
Total (year)	143,799,758	109,020,950	75.8	3,933,768	2,958,901	75.2	2,904,587	....
1930								
Jan.	11,691,264	8,772,273	75.0	329,628	237,344	72.0	244,536	69,940
Feb.	10,888,704	8,971,760	82.4	306,432	221,314	72.2	213,251	62,134
March	11,796,096	8,643,344	73.3	331,968	230,679	69.5	226,770	58,591
April	11,796,096	8,580,845	72.7	331,968	245,167	73.9	249,848	66,868
May	11,796,096	8,438,113	71.5	331,968	241,681	72.5	235,980	63,237
Total (5mos.)	57,968,256	43,406,335	74.9	1,631,864	1,176,185	72.1	1,170,385	.....

Year and Month	Shipments of boxboard	Stocks of boxboard, end of month	Consumption of waste paper		Per cent of Capacity	Stocks of waste paper end of month	
			Capacity	Consumed		At plants	In transit and unshipped purchases
	Short Tons		Short Tons			Short Tons	
1928							
January	198,360	50,035	299,425	194,378	64.9	158,427	62,191
February	212,412	51,590	299,825	198,573	66.2	145,823	60,048
March	242,739	41,845	323,919	214,527	66.2	145,961	47,332
April	231,519	41,632	299,825	216,967	72.4	137,380	47,561
May	240,834	47,255	311,922	225.297	72.2	131,390	64,385
Total (5 mos.)	1,125,864	.....	1,534,916	1,049,742	68.4	.....	.....
June	229,901	55,818	311,922	211,107	67.7	134,577	43,490
July	209,412	51,044	299,825	194,261	64.8	137,068	62,066
August	238,885	50,150	323,919	218,429	67.4	121,529	48,118
September	236,004	47,788	287,928	223,009	77.5	120,857	53,354
October	254,530	46,062	323,919	245,734	75.9	132,712	73,245
November	241,524	49,450	299,825	228,247	76.1	140,583	49,992
December	204,184	57,738	299,825	200,572	66.9	152,529	43,457
Total (year)	2,740,304	.....	3,682,079	2,571,101	69.8	.....	.....
1929							
January	251,812	58,661	317,980	243,404	76.5	141,389	49,115
February	233,284	59,067	293,520	222,019	75.6	130,890	54,132
March	263,038	57,065	319,046	246,660	77.3	142,026	51,531
April	252,622	58,295	319,046	236,150	74.0	147,427	67,736
May	263,684	62,541	319,046	249,880	78.3	150,250	53,157
Total (5 mos.)	1,264,440	.....	1,568,638	1,198,113	76.4	.....	.....
June	236,147	61,747	306,775	232,060	76.9	156,352	55,543
July	242,696	62,779	319,046	214,574	67.3	170,745	62,967
August	267,039	61,268	331,317	256,339	77.4	171,218	59,480
September	245,957	59,364	294,504	231,029	78.4	175,279	87,700
October	270,929	60,331	331,317	254,163	76.7	186,806	70,020
November	238,447	60,967	306,725	230,046	75.0	193,534	51,650
December	182,999	63,949	306,725	172,336	56.2	197,841	49,012
Total (year)	2,948,654	.....	3,765,047	2,788,660	74.1	.....	.....
1930							
January	233,812	66,498	318,786	223,288	70.0	180,055	54,142
February	221,447	66,438	296,429	216,717	73.1	179,497	54,577
March	229,625	67,492	321,126	229,909	71.6	192,957	54,629
April	241,458	72,071	321,126	230,993	71.9	181,125	51,950
May	239,945	75,542	321,126	234,556	73.0	186,512	35,319
Total (5 mos.)	1,166,287	.....	1,578,593	1,135,463	71.9	.....	.....



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

North Bergen, N. J.—Joseph Gatti, president of the Gatti Paper Stock Company, 122 East 42nd street, New York, has taken title to the former factory of the Peerless Rubber Company, an interest of the United States Rubber Company, Broadway and 58th street, New York, at Fisher avenue and Bergen turnpike, North Bergen. The property consists of brick buildings on a tract, 125x70 feet, and will be used by the purchaser for expansion in operations. Immediate possession will be taken.

Wisconsin Rapids, Wis.—The Consolidated Water Power and Paper Company, Wisconsin Rapids, has had plans approved by the State for a new one-story addition to its local mill. Estimated cost of structure has not been announced.

West Springfield, Mass.—The Strathmore Paper Company, Mittineague, Mass., is said to have revised plans under way for proposed new plant unit at West Springfield, originally projected a number of months ago and since held in abeyance. It will be two-story, brick, reported to cost about $150,000 with equipment. It is understood that a portion of the unit will be given over to printing service. L. R. Howes is company engineer in charge.

Detroit, Mich.—The Barnum Brothers Fibre Company, Inc., has been chartered with a capital of $10,000, to manufacture paper, fibre products, etc., and will take over and expand the company of same name, with local headquarters at 5824 West Fort street. Incorporators of the new company are Maynard S. and Leslie F. Barnum.

Washington, D. C.—The Stone Paper Tube Company, 30 O street, N. E., and its affiliated organization, Stone Straw Company, same address, manufacturer of straw tubes, etc., have approved plans for a new plant at 910 Franklin street, N. E., consisting of a five-story and basement structure, 89x125 feet, reported to cost close to $200,000, with machinery. General contract has been let to Boyle Robertson, Inc., Evans Building, Washington. I. H. Harris, Washington, is architect.

Carlstadt, N. J.—The plant of the Burkhardt Paper Company, Thirteenth street, was destroyed by fire, July 17, with a loss reported in excess of $50,000, including equipment. No plans for rebuilding have been announced and it is doubtful if such work will be carried out at the present time, the company being in financial difficulties. The mill was closed down about two months ago, when a receiver was appointed.

Cooperstown, N. D.—The Prairie Fibre Mill Company, Kensa', N. D., is in contact with the Commercial Club, as well as the Kiwanis Club of Cooperstown, and is said to have tendered a proposition for the establishment of a new local mill, initial project to consist of two one-story units. Estimated cost has not been announced. The proposal of the company is now under consideration.

Watertown, N. Y.—The St. Regis Paper Company has concluded arrangements for the purchase of the Bates International Bag Company, 48 Wall street, New York, holding foreign rights to the manufacture of Bates multi-wall paper bags, and now licensing companies in about 40 foreign countries to manufacture these units under the Bates patents. The purchasing company acquired the Bates Valve Bag Company, Chicago, Ill., manufacturer of such paper bags for domestic market, a number of months ago; it will operate the Bates International organization in connection with the other Bates company, and plans extensive development in all parts of the world for this branch of production.

Newark, Del.—The Continental-Diamond Fibre Company, Newark, has placed a five-day week schedule in operation at its local mill until further notice, the plant to be closed on Saturdays. It is planned to adopt a similar production basis at other plants of the company, including the mill at Bridgeport, Pa.

Chicago, Ill.—The Lanzit Corrugated Box Company, 2435 South Rockwell avenue, has leased a portion of space in its building at 2509 West Twenty-second street, totaling 25,000 square feet, to the Berger Manufacturing Company, Canton, Ohio, which will occupy for another line of service.

Boston, Mass.—The American Glue Company, 121 Beverly street, is arranging to dispose of its sandpaper manufacturing interests to the Carborundum Company, Niagara Falls, N. Y., which will also take over a similar branch of the business of the Abrasives, Ltd., a Canadian subsidiary of the first noted company. It is understood that the purchasing company plans to develop this line of output. The American Glue Company also proposes to dispose of the business of its subsidiary, the Baeder-Adamson Company, to the Minnesota Mining & Manufacturing Company, Forest street, St. Paul, Minn., manufacturer of sandpaper, as well as other abrasive paper stocks, and which will consolidate with its organization.

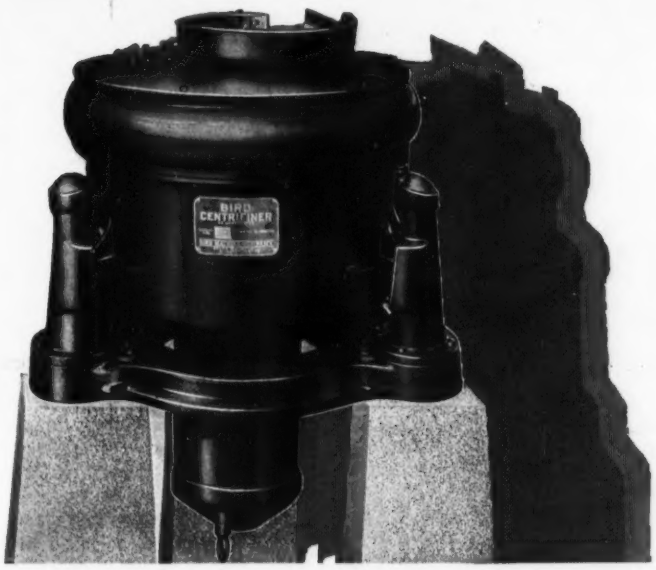
Newark, Del.—Curtis & Brother Company, Newark, has adopted a reduced production schedule at its local mill, and will operate on a curtailed weekly basis until further notice.

Caruthersville, Mo.—The Dillman Egg Case Company has begun the rebuilding of portion of its local plant recently destroyed by fire with a loss of about $150,000, including equipment, and will push the work to completion. The new unit, with equipment, is expected to cost close to the amount of the fire loss.

New York, N. Y.—The West Virginia Pulp and Paper Company, 230 Park avenue, has disposed of its six-story storage and distributing plant at 604-10 West 37th street to the New York Central Railroad Company, 466 Lexington avenue, which will use the property in connection with a new terminal project in that section. The railroad company has conveyed a two-story building on site, 99x100 feet, at Eleventh avenue and 39th street, to the West Virginia company, and it is understood that the latter will occupy at an early date for warehouse purposes.

Marcus Hook, Pa.—The Viscose Company of America, Inc., is running on a 50 per cent production schedule at its different mills and will hold to that basis for an indefinite period.

Denver, Colo.—The Combined Locks Paper Company, Appleton, Wis., is seeking to have the United States Forestry Service arrange two contracts for the purchase of about 2,000,000 cords of pulp timber in the Southwestern portion of Colorado, instead of making a single award to the Trans-Mississippi Developmen-



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BIRD CENTRIFINERS

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4174

Company, a subsidiary of the International Paper Company, 100 East 42nd street, New York, recently referred to in these columns. The contract will total $5,438,000, and the Combined Locks company holds that its bid was higher for timber in the Piedra area, while the Trans-Mississippi company was higher for the entire allotment of 2,000,000 cords, which included the timber in the Piedra area.

Kalamazoo, Mich.—The Sutherland Paper Company is running on a capacity schedule at its local mill and plans to continue on that basis for an indefinite time. Advance orders are stated to be the largest in the history of the company, and insure capacity for some weeks ahead.

New York, N. Y.—The Union Paper Company has agreed to cancel its lease on space in the property at Little West 12th and Washington streets, releasing to the New State Realty and Terminal Company, in order that the latter organization can utilize in connection with a terminal project in that district.

New Haven, Conn.—The National Folding Box Company, James street, has taken out a building permit for its proposed new plant unit, consisting of a four-story factory, 83x178 feet, to cost about $175,000, with equipment, and will proceed with work at once. Fletcher-Thompson, Inc., 542 Fairfield avenue, Bridgeport, Conn., is architect and engineer.

Brooklyn, N. Y.—The Spector Paper Company has been chartered with a capital of $5,000, to deal in paper products of different kinds. The company will be represented by A. S. Cohen, 217 South Fourth street, Brooklyn, attorney.

Menasha, Wis.—The Wisconsin Container Corporation has been incorporated to manufacture and deal in paper boxes and containers of various kinds. The incorporators are Bart W. Heiss and L. Steinberg, both of Menasha.

New York, N. Y.—The Script Stencil Paper Company has filed notice of company dissolution under state laws.

New York, N. Y.—The Paramount Printed Tape Company has been incorporated with a capital of $10,000, to manufacture paper tape specialties of various kinds. The company is represented by Harry Fogler, 545 Fifth avenue, an attorney.

Paper Mill Employment Decreases

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 16, 1930.—Employment and payrolls in the paper and pulp and paper box industry decreased in May compared with April, according to reports to the Bureau of Labor Statistics, Department of Labor.

Two hundred and seven paper and pulp mills reported their April employment at 59,216, decreasing in May to 58,991, a decrease of 0.4 per cent. The weekly payrolls in these same mills also decreased from $1,619,825 in April to $1,596,561 in May, a decrease of 1.4 per cent.

Reports were also received by the Bureau from 191 paper box plants which gave their April employment at 18,905, decreasing in May to 18,581, a decrease of 1.7 per cent. The payrolls in these plants also decreased from $429,666 in April to $418,920 in May, a decrease of 2.5 per cent.

Now the Foster Paper Company

[FROM OUR REGULAR CORRESPONDENT]

UTICA, N. Y., July 21, 1930.—Announcement has just been made of the taking over of the business and plant of the Foster Box Board Company on Erie street by the Foster Paper Company, a reorganization of the former concern. A number of improvements are now being made to the plant and included in a considerable quantity of new machinery being installed is a huge steam turbine generator. The new concern has discontinued the making of chip board and is concentrating upon the manufacture of paper products used in making paper bottles, tops for milk bottles, etc. Officials of the company claim that the business outlook is good.

TAPPI Notes

J. Richter Salvestn, TAPPI American-Scandinavian Fellow at the Marathon Paper Mills Company, Rothschild, Wis., has just returned to Bergen, Norway.

Carl A. Cajanus who has been at the Menasha plant of the Marathon Paper Mills Company, Rothschild, Wis., for the past year or so, has returned to independent practice in that city as a consulting engineer.

H. C. M. Ingeberg, instructor at the Technical University of Tronjheim, Norway, is in the United States, visiting paper and board mills. He was a visitor at the TAPPI office this week.

W. F. Gillespie, who has been a TAPPI American-Scandinavian Fellow at Kramfors A. B., has returned to the United States. Upon his return to New York, he was married and will spend the next few weeks in the Canadian Northwest.

Three junior chemists have recently joined the pulp and paper staff of the United States Forest Products Laboratory at Madison, Wis., to offset the departure of a number of staff members to positions in the pulp and paper industry. Melburn Heinig, a graduate of the University of Cincinnati, has been assigned to the Laboratory's study of ground wood. Eugene L. Keller, a Penn State man, will be engaged in fiber processing studies, as will also Clarence O. Seborg, a University of Wisconsin graduate.

INSTITUTE NEEDS TECHNICAL ASSOCIATION PAPERS

To complete the set of Technical Association Papers at the Institute of Paper Chemistry, Series 8 and 9 are needed. Anyone having a copy of these volumes that he would be willing to sell or give to the Institute, should get in touch with the Institute of Paper Chemistry Library, Lawrence College, Appleton, Wis.

Large Increase in Tree Planting in New York

[FROM OUR REGULAR CORRESPONDENT]

ALBANY, N. Y., July 14, 1930.—The files of the State Conservation Department show that this year's output of trees from state nurseries for spring planting was 2,250,000 in excess of the total of last year when all previous records were smashed. The largest increases were in forest plantings on state lands and in municipal forests, both of which were directly affected by the Hewitt laws. These laws provide for the purchase and reforestation of abandoned farm lands and the furnishing of state aid to counties carrying out reforestation movements.

Sixteen of the county forest projects started under the Hewitt state aid plan required 4,415,000 trees. Among the counties that planted them were Essex, Otsego, Lewis, Oswego, Schoharie, Madison, Oneida, Steuben, Montgomery, Chautauqua, Cattaragus and Seneca. The state also furnished trees for 191 municipal reforesting projects, city, village and town projects, city and school district forests, fish and game clubs. Other planters included Izaak Walton League Chapter, Rotary, Kiwanis and golf organizations, American Legion posts, fair grounds owners, Boy Scouts and Y. M. C. A. branches. State institutions planted 275,000 trees and the largest plantation was made at Clinton prison near Dannemora.

Adams Paper Co. Statement Shows Surplus

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 21, 1930.—The annual statement of the A. L. Adams Paper Company, Baldwinsville, Mass., shows a surplus of $3,752. The assets include real estate, $178,435; machinery, $175,953; merchandise, $27,244; furniture, fixtures tools, $632; vehicles $3,697; accounts receivable, $9,630; cash, $1,683; prepd. exp. $2,442; org. exp. $8,630. Liabilities include notes payable, building and machinery, $86,264; accounts payable, $30,355; notes payable, $25,781; reserves, $24,107; surplus, $3,752; 34,051 shares of no par value, $238,357.

WRITE YOUR NAME AND ADDRESS ON THE MARGIN OF THIS PAGE AND MAIL IT TO US FOR A CATALOG

A news mill repaid the cost of its Downingtown Suction Roll installation at the end of seven months. They installed two rolls in 1925, therefore the rolls have paid dividends for more than four years, and are still running. The design and construction of the Downingtown Roll safeguards the economies derived from the suction roll operating principle. A complete 24 page catalog sent upon request.

Downingtown Manufacturing Co.
Downingtown, Penna., U. S. A.

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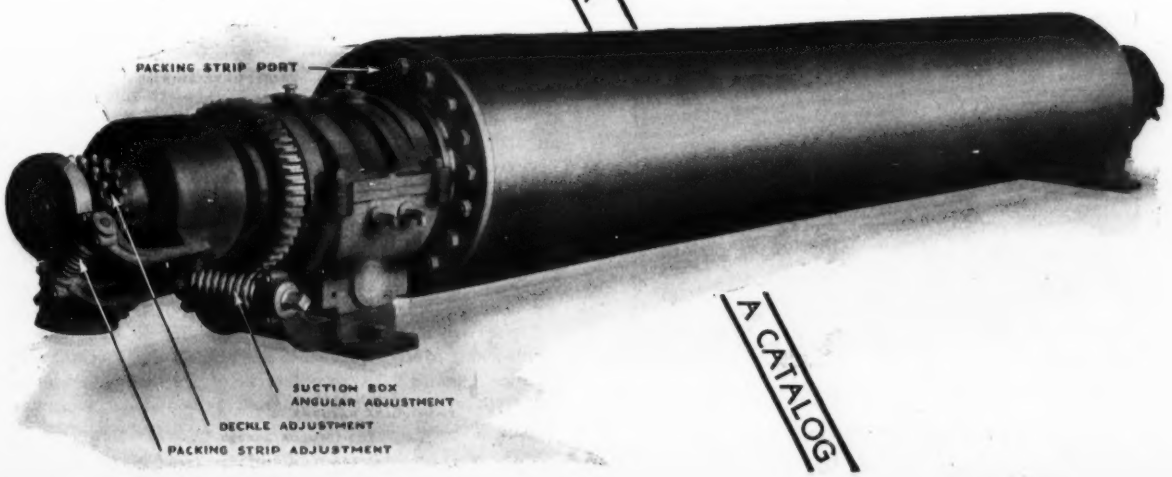
SUCTION ROLL



POWER PLANT SECTION

REDUCING POWER COSTS THROUGH UNIT TREATMENT

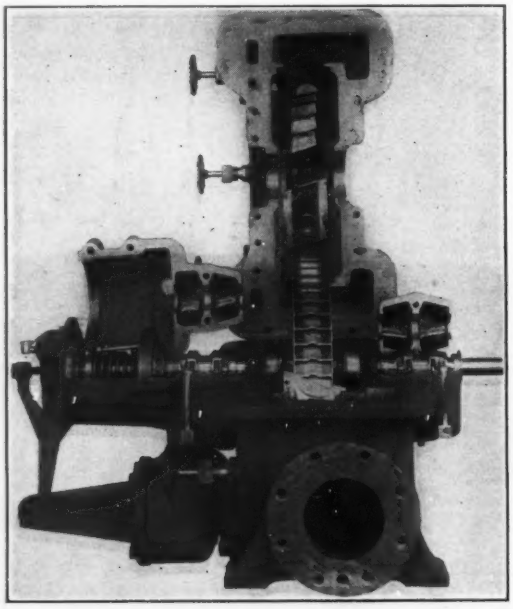
Conducted by Reginald Trautschold Consulting Engineer

Drive and Power Units for Paper Machines

1—Steam Turbine Power Units

Admittedly, there have been marked advances in paper machine drives and in driving practices during the past few years. The old mortise gear and rope drives, so common a few decades back, have been replaced in many instances by much more efficient, dependable and flexible systems. Sectional drives have been highly developed, of both mechanical and electrical types, and the operating speeds of machines in general have been substantially elevated, the prime movers of today being for the most part either steam turbine or electric motor units.

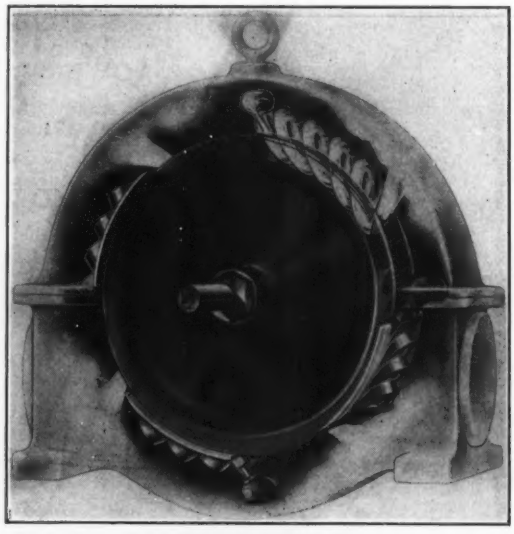
Such comments are, of course, mere platitudes, so what then is the present situation in respect to paper machine drives, be they mechanical or electrical? An engineering question is entailed, it is quite true, but the mill seeking information should at least have some idea of where to turn for guidance. Should the builders of the paper machines be approached or the manufacturers of the actuating power units? Believing that one or the other of these interests should well be in a position to impart valuable information to the paper making industry, these columns are thrown open for a candid expression of opinions.



Courtesy: Terry Steam Turbine Co.

FIG. 1

Solid wheel turbine with cover and bearing caps raised.



Courtesy: Terry Steam Turbine Co.

FIG. 2

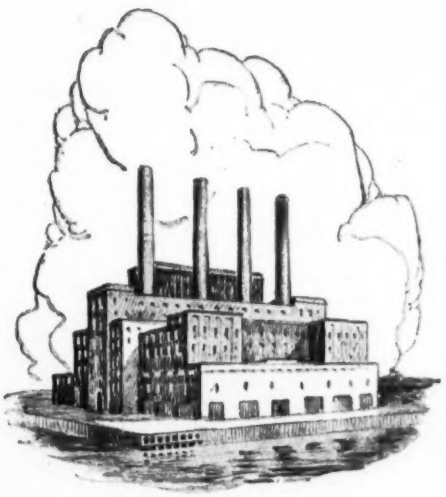
Action of steam in solid wheel turbine.

Views of Paper Machine Builders

The views of paper machine builders should be of especial interest, for they must unquestionably portray accurately the modern trend in paper machine drives. These equipment manufacturers are specialists in paper machine design and construction, however, rather than in that of power units. In fact, they are much more concerned with having their machines satisfactorily driven than they are with the type of power unit employed, with the result that their comments are naturally and of necessity quite guarded. These machine producers are concerned with drive units, not power units, as is clearly shown in the brief remarks which follow.

One of the best known of these paper machine builders states, for example, that while the main drive of a paper machine usually consists of a motor, steam turbine or other prime mover driving the line shaft of the paper machines, units which his concern does not actually build, the concern is oftentimes, in fact generally, consulted when it comes to the purchasing of such units, in the case of new paper machines and in the case of machines that are rebuilt. Quoting: ". . . we feel there are distinct advantages to each type of drive for the different mills and our sole interest is to help the mill obtain the best type of drive for their purpose.

Where the gauge hand points to 1400 pounds



One of the most striking developments in Central Station practice was the adoption of 1200 pounds steam pressure for Edgar Station. Here indeed was Modern Steam, and the high pressure plants that followed proved that the idea of operating boilers at 1200-1400 lbs. pressure was sound and practicable.

It is natural that The Babcock & Wilcox Company should have been chosen to build the first 1200-1400 pound unit for Central Station service. Natural because the first Central Station boiler to operate at 650 pounds pressure—a marked advance over previous pressures—was a B. & W.

To-date there are 31 Babcock & Wilcox boilers either in service or in the process of manufacture that will deliver steam at 1200-1400 pounds pressure.

The following Babcock & Wilcox boilers for 1200-1400 pounds pressure are in service or being made for the companies listed below:

American Gas & Electric Company . . United Gas & Improvement Company—Deepwater	6
W. S. Barstow & Company, Incorporated—Holland	2
Consolidated Safety Valve Company—Bridgeport	1
Edison Electric Illuminating Company of Boston—Edgar	5
Jersey Central Power & Light Company—South Amboy	3
Masonite Corporation—Laurel	2
Milwaukee Electric Railway & Light Company—Milwaukee	1
Pacific Gas & Electric Company, San Francisco	3
Phoenix Utility Company—Houston	2
State Line Generating Company—Hammond	6

THE
BABCOCK & WILCOX
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G11

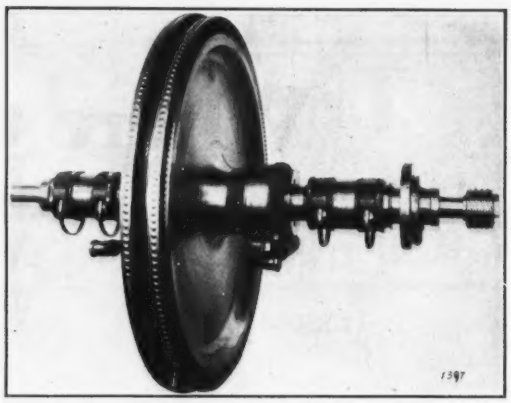
If you feel we can be of assistance, we will be glad to supply any information you require, but believe you could get it better and more easily from the actual builders."

Circumspect as are such remarks, considerably more light is thrown upon the related question of the sectional driving of the paper machine itself. The same authority states: ". . . we are building hundreds of gear units for paper machines which, owing to their many advantages, have practically supplanted the sectional electric drive, the old mortise drive and the rope drive, and our feeling is with the mechanical sectional drive that we are simply beginning our work along these lines and that in a few years there will be greater improvements."

Another prominent builder of paper machines disposes of the question with, "We are not builders of steam turbine and electric motor drives for paper machines," indicating that to him at least the manner of how the paper machine is driven is of little concern, provided the power supply is suitable. A third of the leaders among paper machine builders concurs with the expressed partiality for the mechanical sectional drive, stating: "It is our frank opinion, and we believe our experience is typical of other builders (of paper machines) that the spiral bevel gear combination as applied to the individual paper machine drive, offers greater economic advantages to a paper mill than any other." These drives, incidentally, may well be termed specialty units and are today examples of well designed and accurately balanced transmission gears, usually mounted on anti-friction bearings, which have much to commend them. Again quoting: "The investment involved is much less per drive than might be imagined and even with a magnetic clutch (a refinement entailing an additional investment which may heretofore have been looked upon as of rather questionable value) can be installed profitably on the average paper machine. Whereas the price would be higher than the usual prices for bevel mortise gear drives with plain bearings, it is still considerably less than the price of the sectional electric units."

It is comments such as these which best indicate the trend in paper machine drive developments, although they voice more the requirements of the drive units than of the power units. That is to say, the paper machine builder concerns himself with the drive of his machine from the point of power application and is, in effect, unconcerned with the source of power or variety of prime mover. The selection of power unit, consequently, resolves itself into a question of adapting the source of power to the requirements of the drive units of the paper machine and guidance in this important matter should be sought, it would appear, from the builders of the suitable prime movers, steam turbines or electric motors. This is particularly advisable since either type may be employed to actuate the drive units of the paper machine satisfactorily.

The advantages of the respective prime movers can be presented best, doubtless, by the manufacturers of such power units, supplemented by evidence in the form of incidental references to specific installations, and the following remarks are mostly contributions of just this nature. They are presented verbatim in the main and express the opinions of the concerns to which the remarks are credited, the present discussion treating with steam turbine prime movers only. A similar presentation of the advocates of electric motor prime movers will appear in these columns in August.



Courtesy: Terry Steam Turbine Co.

FIG. 3

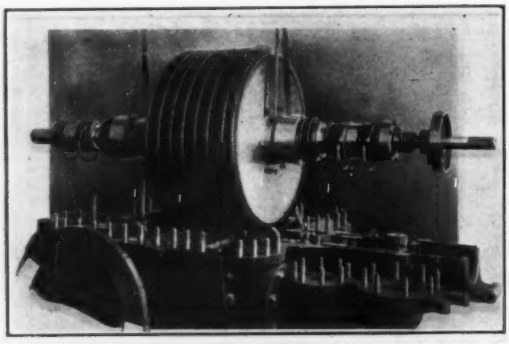
Two row wheel of axial flow turbine.

The Steam Turbine Machine Drive

THE TERRY STEAM TURBINE CO.

E. C. Terry, pioneer in the development of the steam turbine for commercial and industrial applications, started his experiments back in 1888, although it was not until 1916, fourteen years after his turbine was on the market and only after it had been successfully employed in driving pumps, fans and electric generators in central station, industrial and marine services, that it was first applied to paper machine drives. A background of successful applications thus considerably predated its introduction to the paper industry as a tried and approved prime mover, with the result that even the first steam turbine paper machine drive, that at the St. Maurice Valley Corporation, St. Maurice County, Quebec, proved eminently successful.

This first installation was on a news print machine, calling for approximately constant speed service only, so before presenting other steam turbine paper machine drive applications a few brief remarks concerning the varieties of steam turbines suitable for paper machine drive services will be in order. The application of turbines to variable speed drives being, obviously, a somewhat more complicated problem than the application of turbines to drives of constant speed, some familiarity with the constructions



Courtesy: Terry Steam Turbine Co.

FIG. 4

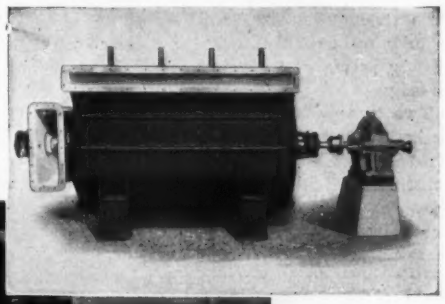
Rotor of 7-stage steam turbine for paper machine drive.

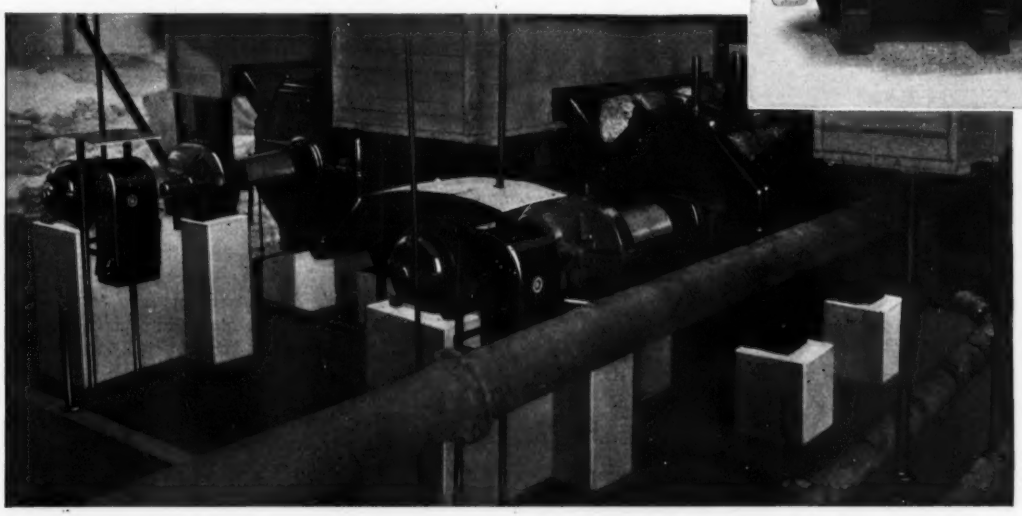
Courtesy: Terry Steam Turbine Co.

FIG. 5

Close-up of 350-horsepower steam turbine drive at mill of Albemarle Paper Mfg. Co., Richmond, Va.

INCREASED EARNINGS *without* INCREASED SALES





TO increase sales is not the only way to increase profits. You can lower the cost of producing your product.

And this—when you come right down to it—is really easier than increasing sales.

Because the paper market presents obstacles of its own. While you—in your own plant—have your methods of production entirely under your own control.

We refer, particularly, in this advertisement, to the cost of screening pulp—to the Valley-Thune Rotary Screen.

The data gathered from present installations (17 of them) has proved, conclusively, that this machine not only reduces the cost of screening sulphate and sulphite pulp tremendously, but that the degree of cleanliness is comparable to the best of flat screens.

Certainly an investigation concerning what this machine can be expected to do for you is a wise and worthwhile move. The Valley Iron Works Co., Appleton, Wisconsin will send you any information you want.

VALLEY

Equipment for Paper and Pulp Mills

New York Office: 350 Madison Ave.
Western Mfg. & Sales Div.: Smith & Valley Iron Works Co., Portland, Ore.
Canadian Representatives: Pulp & Paper Mill Accessories, Ltd., Montreal, Canada

of available turbine units will be helpful in forming an appreciation of the extreme flexibility of the steam turbine drive.

As the exhaust steam can be used in the driers, the turbines have in most all cases been non-condensing. This permits the use of a straight impulse turbine, with its attendant simplicity. In impulse turbines, the steam expands completely in the jets, converting pressure into velocity and doing the work by means of velocity.

Two types of turbines are available, one being the solid wheel design first developed and which is shown in the first of the illustrations with its casing and bearings raised to show the inside construction. Steam enters the governor valve at the lower left, thence it passes into the steam chest or steam ring and through steam jets where it is expanded and its energy converted into velocity. When the steam leaves the jets, it is delivered at high velocity into the buckets in the wheel, which, being semi-circular deflect the steam into the reversing chambers in the turbine casing, clearly shown in the raised upper half. These reversing chambers, likewise, have semi-circular buckets and, consequently, return the steam to the wheel a second time. This is repeated four or five times, until all of the workable velocity in the steam has been used, when it is rejected into the casing and finally into the exhaust lines. The action is indicated plainly in the second illustration and may be likened to that of water on a Pelton water wheel. There is no end thrust with this design of turbine and the unit has a very high starting torque, an important characteristic for paper machine drive service.

The other type of steam turbine frequently employed for the paper machine drive is the axial flow variety with a built-up wheel. A rotor of a turbine of this design is illustrated, the wheel consisting of a steel disc in which blades are mounted. The customary construction makes use of two rows of blades as shown, although three row rotors are sometimes employed, and, occasionally, two 2-row wheels in series, the latter arrangement constituting a two-stage machine. It also sometimes happens that the steam conditions or required economy in use of steam are such that a multi-stage design of turbine is most suitable, such units commonly being of either the straight non-condensing or of the bleeder type, the steam, as in the simpler units, traveling parallel to the turbine shaft. This axial flow design, naturally, sets up an end thrust, making necessary the provision of suitable thrust bearings.

The application of the steam turbine to the variable speed drive was a more complicated problem and was taken up slowly. A systematic study was made of the turbine performance demands by the paper industry, representatives of the turbine manufacturer visiting the mills and collecting much data. In short, the paper trade dictated the specifications and requirements and these were met by the turbine manufacturer.

The first variable speed turbine drive was installed in 1920, four years after the turbine driven constant speed drive at the St. Maurice Valley Corporation had been placed in operation, and

Courtesy: Terry Steam Turbine Co.

FIG. 6

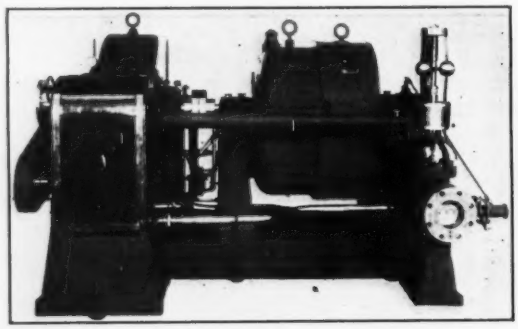
175-horsepower variable speed drive at mill of St. Maurice Valley Corp. on machine making wrapping paper.

went into service at the plant of the Fox River Paper Company at Appleton, Wis. Since then, a great many such drives have been installed in variable speed service, the turbine units varying in size from 50 to 800 horsepower and aggregating in capacity over 20,000 horsepower.

A typical view of a variable speed drive is shown in the close-up of the 350-horsepower drive at the mill of the Albemarle Paper Manufacturing Company at Richmond, Va. This illustration shows the turbine, gear, speed control and governor, also part of the lineshaft from which belts go down to various sections of the paper machine on the floor below. The driving assemblage occupies very little space in the corner of the building and, due to the light foundations required for the turbine, was placed on the second floor, rather than on the machine floor or in the basement.

The 175-horsepower drive, also in variable speed service, at the mill of the St. Maurice Valley Corporation illustrates the more usual arrangement of the drive below the lineshaft. This particular drive serves a machine used for making the wrapping paper used in the shipment of news print produced on four other turbine driven machines. Incidentally, the St. Maurice Valley Corporation was the concern to install the first constant speed turbine drive in 1916.

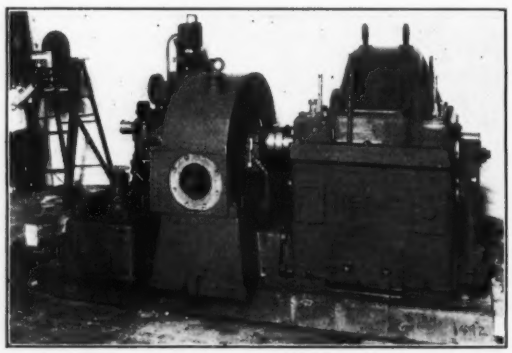
The view of the 450-horsepower drive at the mill of the Itasca Paper Company, Grand Rapids, Minn., is a good example of a multi-stage turbine application to paper machine drive service and well brings out the compactness of the drive assemblage, while the illustration of the 400-horsepower paper machine drive unit built for the mill of the International Paper Company at Mobile, Ala., is arranged for remote push-button control. The governor is oper-



Courtesy: Terry Steam Turbine Co.

FIG. 7

450-horsepower multi-stage turbine paper machine drive at mill of Itasca Paper Co., Grand Rapids, Minn.



Courtesy: Terry Steam Turbine Co.

FIG. 8

400-horsepower steam turbine drive at Mobile, Ala., mill of the International Paper Co.

How BLACK-CLAWSON Did The Thing That Couldn't Be Done And Why They Did It ...

AN out-of-balance roll pounds the bearings and gets out of level and out of line as the bearings give way. If it is a felt roll, the stretch of the felt becomes uneven, the whip too severe, and the life of the felt is shortened.

No, sir, your rolls are not in balance just because they have been balanced while standing still. Nine times out of ten they are far out of balance when running.

What of it? Just this. Black-Clawson balances their rolls both "still" and "running" at high speeds — have the only machine in the Industry capable of determining the balance of a roll while it is turning 1000 R. P. M. — the only machine able to do what everybody said couldn't be done.

SHARTLE

If interested, in longer bearing life and longer felt life, show some interest in how your rolls are balanced.

The April Messenger covers roll-balancing in fullest detail.

The Black-Clawson Co.

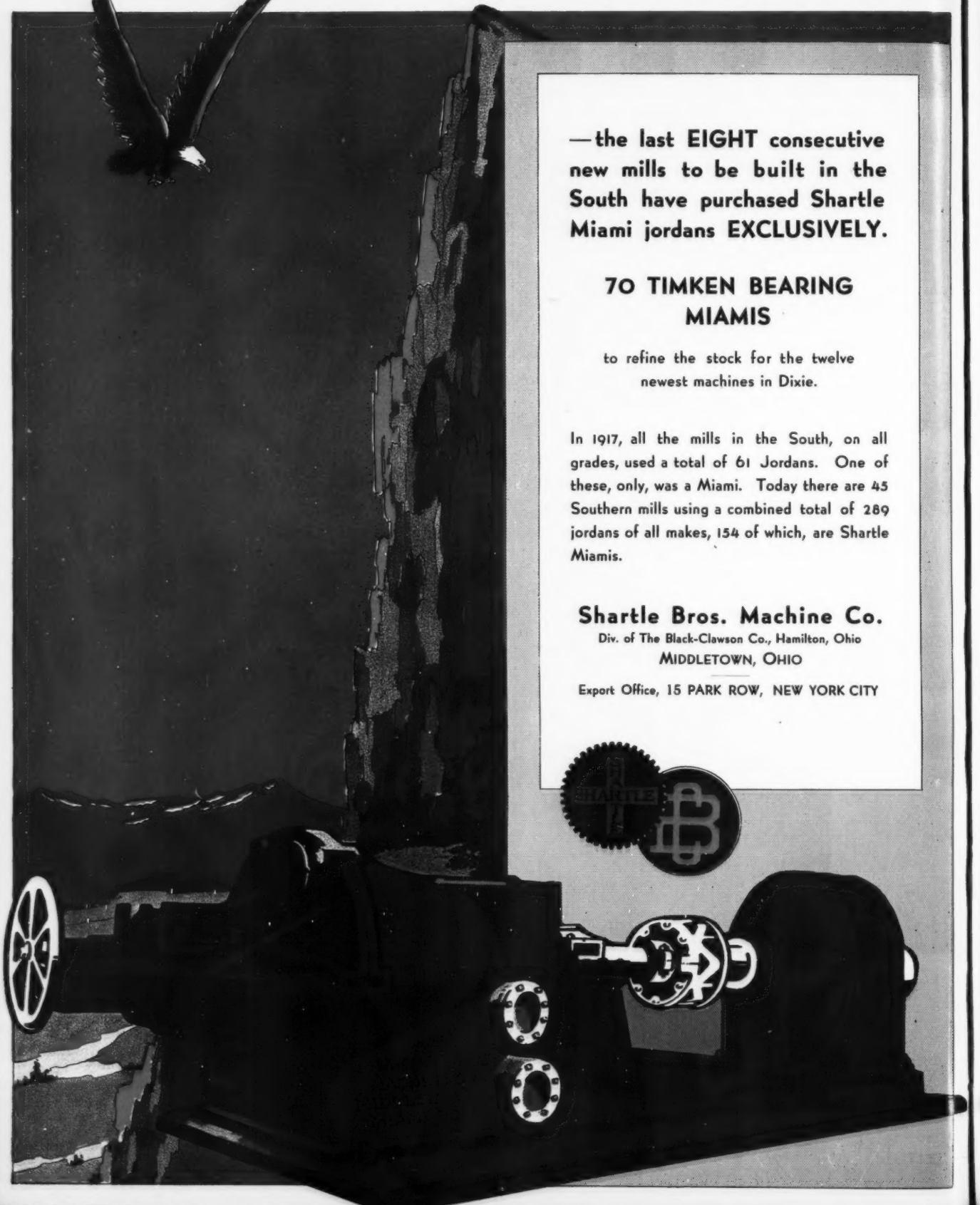
HAMILTON, OHIO

Operating Shartle Bros. Machine Co.
Middletown, Ohio

Export Office, 15 Park Row, New York

BALANCE

SOARING TO THE UPPER CRAGS OF ACCEPTANCE



—the last EIGHT consecutive new mills to be built in the South have purchased Shartle Miami jordans EXCLUSIVELY.

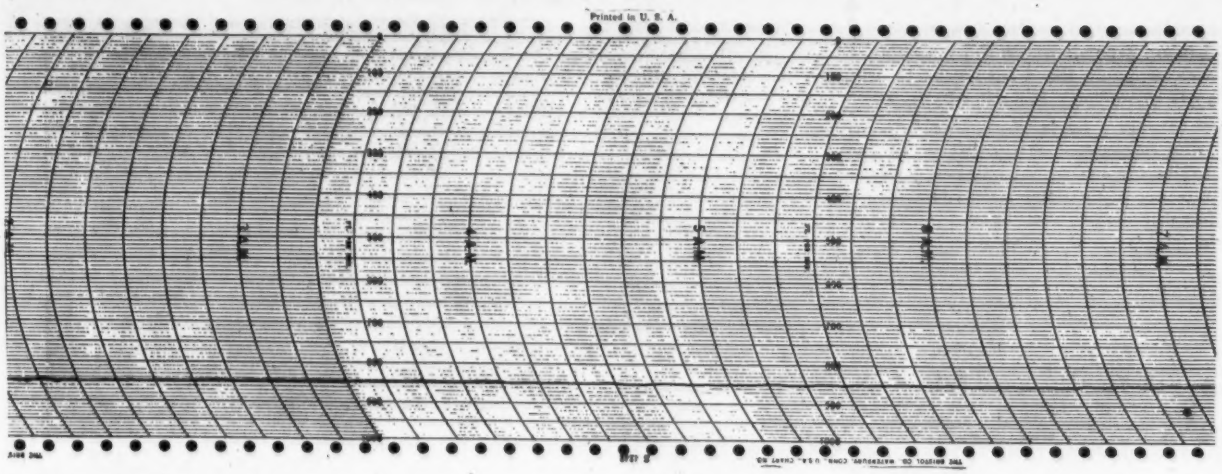
70 TIMKEN BEARING MIAMIS

to refine the stock for the twelve newest machines in Dixie.

In 1917, all the mills in the South, on all grades, used a total of 61 Jordans. One of these, only, was a Miami. Today there are 45 Southern mills using a combined total of 289 jordans of all makes, 154 of which, are Shartle Miamis.

Shartle Bros. Machine Co.
Div. of The Black-Clawson Co., Hamilton, Ohio
MIDDLETOWN, OHIO

Export Office, 15 PARK ROW, NEW YORK CITY



Courtesy: De Laval Steam Turbine Co.

FIG. 10

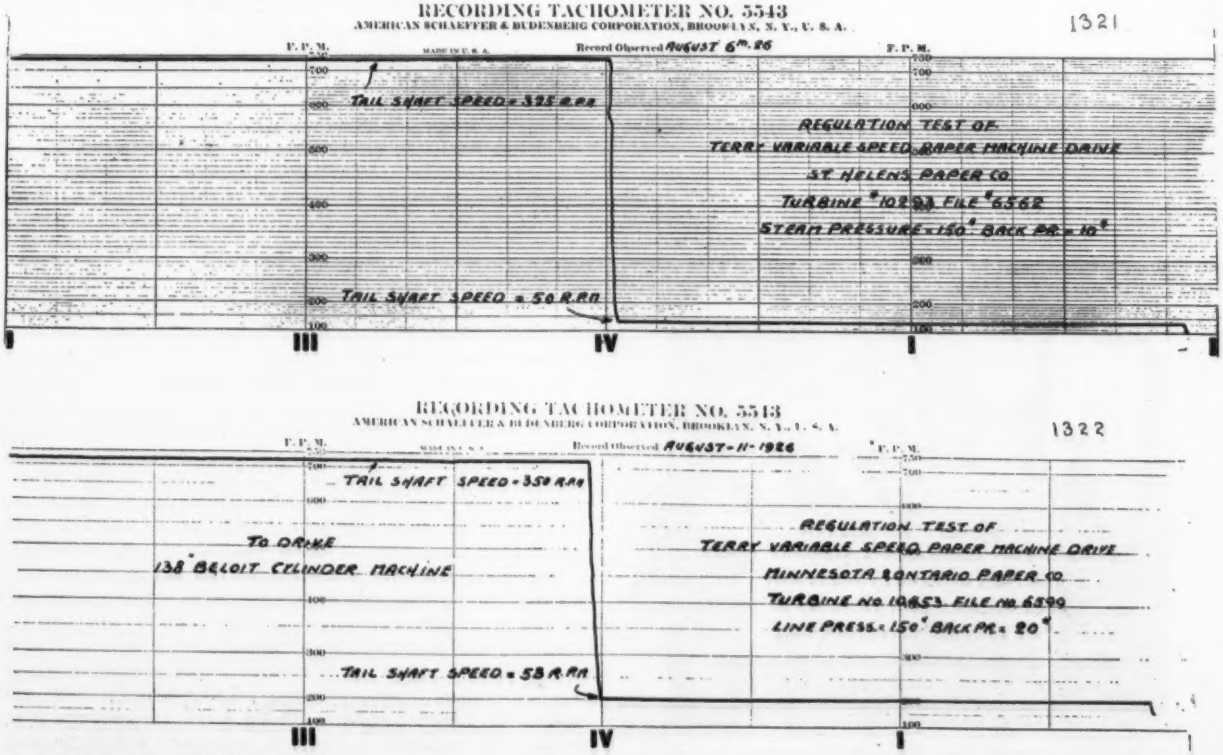
Recording tachometer speed chart of turbine variable speed paper machine drive at Northern Paper Mills.

ated by a small turbine mounted on the oil tank to the left, directly below the governor.

In a more recent development in turbine speed control now available, the push buttons are done away with and the indicating tachometer is equipped with two pointers. One of these pointers indicates the prevailing paper speed, while the other, which is attached to an exterior knob, is employed to change the speed. To bring about a speed change, it is only necessary to move the pointer under control of the knob to the desired paper speed. The machine will reach this speed automatically at a definite rate of acceleration or retardation, as the case may be, without further attention. The tachometer may be placed at any distance from the drive, anywhere in the mill in fact, and a recording indicator in the superintendent's office can supplement this control, providing the information for making accurate and permanent records.

A point of especial interest to mills troubled with paper speed regulation is that with the modern steam turbine drive any speed range up to 10 to 1, or even higher, can be obtained. At the same time, any speed within a given range is available instantly, for the speed change with a steam turbine drive is gradual, positive and promptly effected and is not in steps.

Numerous tests conducted on typical paper machine installations, to measure and appraise savings effected by modern steam turbine drivers, have been made and the findings on the whole


RECORDING TACHOMETER NO. 5543
AMERICAN SCHAEFFER & BUDENBERG CORPORATION, BROOKLYN, N. Y., U. S. A.
1321
Record Observed AUGUST 6th. 26
TAIL SHAFT SPEED = 325 R.P.M.
REGULATION TEST OF
TERRY VARIABLE SPEED PAPER MACHINE DRIVE
ST HELENS PAPER CO
TURBINE # 10233 FILE # 6562
STEAM PRESSURE = 150# BACK PR. = 10#
TAIL SHAFT SPEED = 50 R.P.M.
III
IV
I
RECORDING TACHOMETER NO. 5513
AMERICAN SCHAEFFER & BUDENBERG CORPORATION, BROOKLYN, N. Y., U. S. A.
1322
Record Observed AUGUST-11-1926
TAIL SHAFT SPEED = 350 R.P.M.
TO DRIVE
138" BELOIT CYLINDER MACHINE
REGULATION TEST OF
TERRY VARIABLE SPEED PAPER MACHINE DRIVE
MINNESOTA & ONTARIO PAPER CO.
TURBINE NO. 10453 FILE NO. 6399
LINE PRESS. = 150# BACK PR. = 20#
TAIL SHAFT SPEED = 58 R.P.M.
III
IV
I

Courtesy: Terry Steam Turbine Co.

FIG. 9

Typical speed regulation charts of steam turbine variable speed paper machine drives.

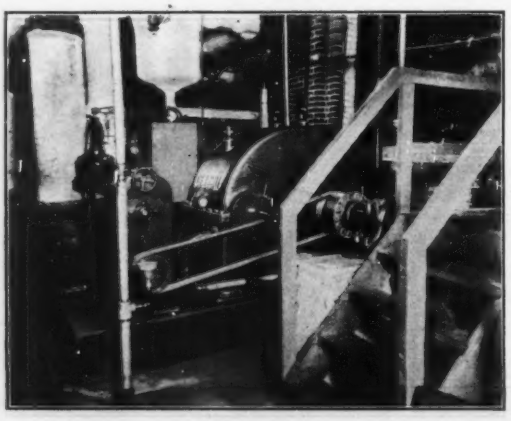
have been very favorable, but these are more of individual interest than of general concern. Local conditions exert so much influence, as a rule, that what applies to one paper machine will rarely apply to another. For this reason, it is held that elaborate reports on savings effected, etc., are quite apt to be misleading.

For example, a case comes to mind where a multi-stage steam turbine replaced a single stage machine. The savings reported ran into several thousand dollars annually. Upon investigation it was found, however, that there were mitigating circumstances which in fairness to the original turbine drive should be taken into account. The single stage turbine had been installed to supply a certain horsepower and corresponding amount of exhaust steam. When installed, the exhaust from the single stage turbine was in reality approximately 1,000 pounds less per hour than was then required for drying service. The power unit was efficient and did the work for which it was designed satisfactorily.

Subsequently, however, the conditions in the mill were completely altered, owing to a radical change in the class of stock manufactured, and while the power requirements for driving the paper machine remained substantially the same, the drier steam requirements were greatly reduced. As a result, there was a considerable surplus of exhaust steam wasted and the replacement of the single stage turbine by a multi-stage unit was a logical and natural procedure, to meet the new mill conditions. The savings effected by the change should not be interpreted as a disarrangement of the efficient single stage turbine, for had the conditions remained the same the multi-stage unit would probably have shown a considerable loss, owing to its higher initial cost and different operating characteristics.

The development, favorable for one type of turbine and unfavorable for the other, serves to show merely that the turbine paper machine drive can be designed for whatever conditions prevail. It is decidedly the part of wisdom, then, for a mill contemplating the installation of a steam turbine drive to state clearly and definitely the operating conditions and just what is desired in the way of both power and process steam. The single stage turbine is a highly economical unit for many, probably the large majority, of ordinary paper machine drive applications. For other applications, the multi-stage unit is the logical choice. No hard and fast rule can be stated as to the proper use of any particular type of steam turbine, the question hingeing upon a number of considerations among which that of a reasonable heat balance commands particular attention.

Not only is this true to lineshaft drives, but to sectional drives of the mechanical variety as well. Many of the more recent steam turbine paper machine drive installations have been used in connection with spiral bevel or worm gear drive units. This combination, it is reported, works out very satisfactorily.



Courtesy: De Laval Steam Turbine Co.

FIG. 11

Transmission from low speed gear shaft to variable speed governor on variable speed paper machine drive at Northern Paper Mills.

Courtesy: De Laval Steam Turbine Co.

FIG. 12

Variable speed transmission between low speed shaft and governor on variable paper machine drive at Northern Paper Mills.

Finally, in making recommendations for paper machine drives of any variety, every effort should be made to study the particular needs of the mill in question. If this is done, the manufacturer who has accumulated considerable information on various makes of paper machines, weights of paper, speed of production, drier pressure, steam requirements, etc., will be in a position to render valuable assistance to the paper mill and to make recommendations of real value.

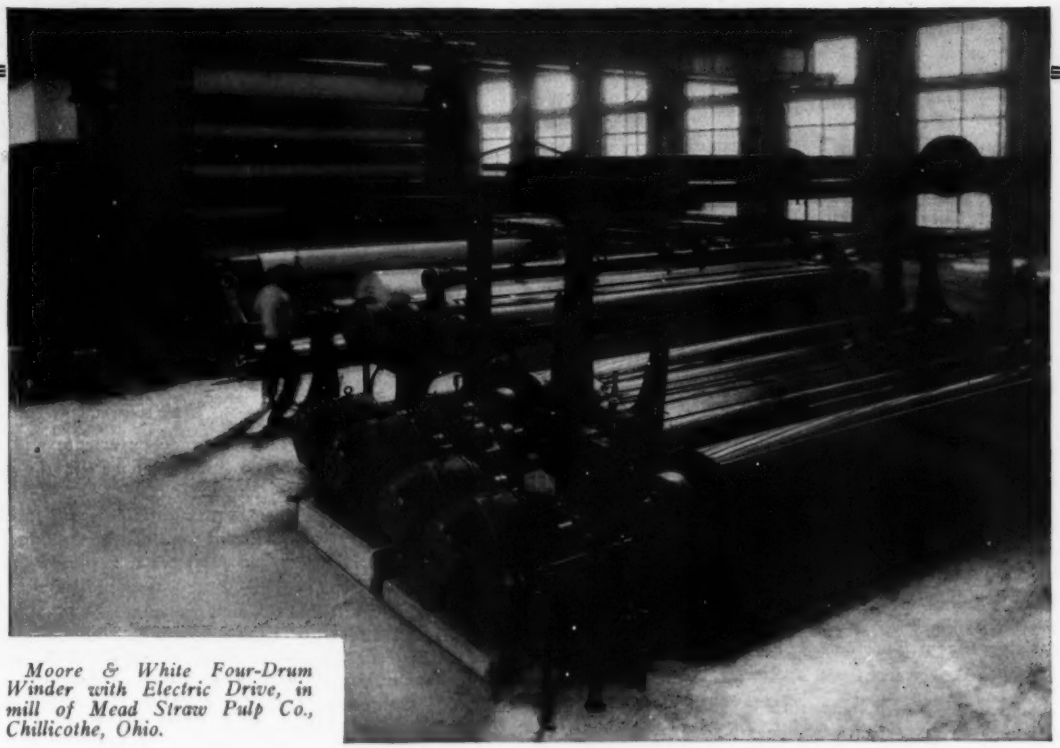
Progressive Economy in Turbine Drives

In comparison with reciprocating steam engines, the variety of prime mover most customarily supplanted, steam turbines in general have longer life, are simpler in construction, possess more positive reliability and are characterized, ordinarily, by lower maintenance, higher starting torque, freedom from oil in the exhaust, ability to operate against higher and different back pressures and in many cases by a saving in space occupied. These are all important advantages, each with a distinct and determinable value. In addition, important economies in steam demand and in efficiency of steam utilization are also possible and it is for this reason that the fitting of the turbine to the mill conditions is so important, if the full economies to be expected from an investment in a steam turbine drive are to be realized. If mill conditions change, the satisfaction given by the turbine is bound to vary.

This situation has already been referred to in the case of a multi-stage turbine supplanting a single stage unit and effecting an annual saving of some thousands of dollars, an example of what may be termed progressive economy in turbine drives. Every mill strives to effect economies in steam consumption and every betterment attained in such direction serves, unless mill production is correspondingly stimulated or other profitable use found for the surplus steam, to disturb the economic balance between the turbine and mill conditions. If the disturbance is sufficient to precipitate a waste of steam, sacrificing the major heat of evaporation as well as the minor heat of the liquid, it is an indication that the expansion of the steam in the turbine should be carried further and that progressive economy in the turbine drive is probably possible by increasing the number of turbine stages. As previously stated, it is not necessarily any indication that the simpler turbine when installed was not economically balanced to the then existing mill conditions.

The emphasis placed on this particular point is well justified by the fact that in almost every instance where greater economies have been realized by supplanting an existing driving turbine with another, the new turbine has had more stages than the one it replaced. One manufacturer[1] of both multi-stage and single stage steam turbines, a concern which has to its credit a number of

[1] Moore Steam Turbine Corp.



Moore & White Four-Drum Winder with Electric Drive, in mill of Mead Straw Pulp Co., Chillicothe, Ohio.

Not SPEED, but PULL makes well wound rolls

PAPER MILL men are used to thinking of the second or "variable" drum of a winder pair in terms of *speed*. It "must" run a little faster than the first drum, in order to draw the paper snug.

But what is really needed is not speed but *pull*. As the rolls grow larger, the excess speed that was needed with small rolls must be either reduced or counteracted somehow.

With the older types of drive, controlling that excess speed is difficult. With the M & W Electric Drive, the whole matter takes care of itself.

When starting to wind, the electric motors are separately regulated so that the second or "variable" drum of each pair *pulls* a little harder than the first drum. That draws the paper snug. When all are pulling properly, a master controller brings all four up to the proper speed. Thereafter the winder "runs itself." Not only does it avoid excessive hardness, but it automatically reduces the hardness to just the right degree as the rolls get larger.

Whatever your present winding methods, you will find it useful to know about this important aid in making perfect rolls. Shall we send the new Winder Bulletin?

Yes, we still build belt-driven Winders — and good ones. But we consider the Electric Drive a long step forward.

THE MOORE & WHITE COMPANY

Established 1885

15th ST. & LEHIGH AVE., PHILADELPHIA, PA.

replacement installations which have effected substantial savings for the mills in which they have been made, goes so far as to claim: "For practically all conditions, with the exception of low horsepowers, the multi-stage type of steam turbine will be found to be much more economical than the single stage. By using the proper number of stages the multi-stage turbine may be designed to give better economy under the varying conditions of operation of a paper machine drive turbine than is possible with a single stage turbine.

"Multi-stage turbines in addition to better economy have the further advantage of longer blade life. Blade life decreases very rapidly with decrease of steam velocity. As the steam velocities in multi-stage turbines are proportionately lower than in single stage, the blade life of multi-stage turbines is, therefore, much longer than that of the single stage."

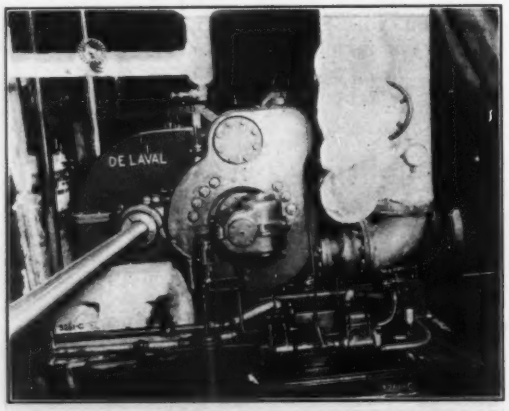
It is also claimed that with the high steam pressures and temperatures used today this feature is very important. The reason for this in part is, of course, that a deficiency in exhaust steam, within reason, is a less costly situation than an excess in exhaust steam which cannot be utilized to advantage and is consequently thrown away. In one case, a little steam makeup will correct the situation, entailing at the most a sacrifice of a portion of the heat of the liquid, while in the other the more costly latent heat of evaporation is wasted as well as the heat of the liquid. In other words, the advisable fitting of the turbine to the mill conditions would appear to favor a reasonable deficiency in turbine exhaust rather than any appreciable excess.

A Variable Steam Turbine for Paper Machine Drive

DE LAVAL STEAM TURBINE CO.

The variable speed, geared steam turbine installation, illustrated by several views, drives a paper machine in the Northern Paper Mills, at Green Bay, Wis. The turbine shaft is connected to the pinion of a speed reducing gear by a flexible coupling, while the slow speed gear shaft is similarly coupled to the paper machine.

The turbine is of the single velocity stage type, widely used for back pressure service where the exhaust steam can all be utilized in heating or processing. The usual speed controlling governor driven from the turbine shaft has, however, been replaced by a special variable speed governor, which is driven through a variable speed transmission from the slow speed shaft of the speed reducing gear. By adjusting the variable speed drive it is thus possible to set and hold the speed of the paper through the paper machine accurately at any value between 1,200 and 300 feet per minute, corresponding to 600 and 150 r.p.m. of the lineshaft, as shown by the accompanying chart produced by a recording tachometer. The turbine is also equipped with a speed limit emergency

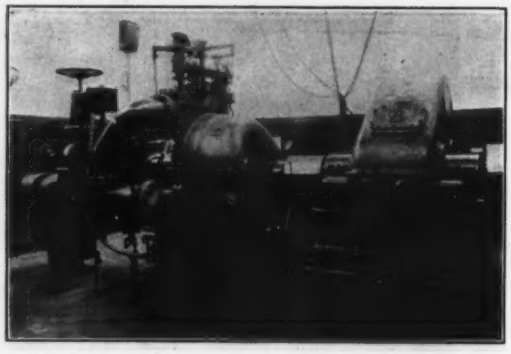


Courtesy: De Laval Steam Turbine Co.

FIG. 13

Variable speed turbine and gear from turbine and showing nozzle valves on steam chest and steam operated oil pump used while starting.—Northern Paper Mills.

trip, for shutting off the steam supply in case of failure of the speed regulating governor.



Courtesy: General Electric Co.

FIG. 14

475-horsepower mechanical drive turbine driving variable speed end of news print machine installed at the St. Croix Paper Co., Woodland, Me.

As a result of Mr. Halbach's wide experience and knowledge of dyestuffs, he is one of the influential men in the dyestuff industry.

The paper machine driven by this variable speed turbine assemblage was designed and built by one of the leading paper mill equipment manufacturers and produces a grade of paper known as "Northern Tissue." This paper has been delivered from the machine at the rate of 990 feet per minute, and ultimately it is expected that a speed of 1,200 feet will be attained. It is of such delicacy that even slight variations in turbine speed would result in breakage of paper and interruption of production. Close regulation of the turbine speed is, therefore, indispensable, and this feature was given primary consideration by the paper mill experts when the equipment was selected.

The turbine is rated normally at 325 horsepower at 600 r.p.m. lineshaft speed, which corresponds to 5,240 r.p.m. turbine rotor speed. Dry saturated steam is received at 145 pounds gage, exhausted against 20 pounds back pressure. The unit has a continuous overload capacity of 375 horsepower with the steam pressure at 130 pounds gage and with 30 pounds back pressure.

The velocity stage turbine is highly efficient when exhausting to atmosphere or against back pressure, as all heat of the steam not converted into work in the turbine is present in the exhaust and can be used for heating, drying and other purposes. Standard design turbines of this type can be used with steam pressures up to 400 pounds gage and temperatures up to 725 degrees Fahrenheit.

[*To be continued*]

General Dyestuff Corp. Changes

Colonel Herman A. Metz is now Chairman of the Board of Directors of General Dyestuff Corporation, and Ernest K. Halbach has assumed the presidency of the company.

Colonel Metz has been identified with the dyestuff industry through many years of important achievement. As chairman, G D C will continue to reap the full value of his outstanding ability and experience.

Mr. Halbach has the distinction of having been associated with practically one concern and its successors throughout his conspicuously successful business career of 31 years. He is a native of Philadelphia, Pa. Upon completion of his education he entered the Boston office of Wm. Pickhardt & Kuttroff, later being transferred to the New York office of Kuttroff, Pickhardt & Co., Inc.

His father was manager of that office and a director of the company, and at the time of the latter's death, Mr. Halbach was made a director of the company and appointed manager, a position which he held until 1922. From January 1922 to December 31, 1925 he was sales manager for Kuttroff, Pickhardt & Co., Inc., with offices in New York. Upon the organization of the General Dyestuff Corporation he became secretary of that company, and was appointed general manager in 1926.

New York Trade Jottings

Arthur Herman, formerly connected with the E. J. Keller Company, has joined the pulp department of Parsons & Whittemore, Inc., of 10 East 40th street, as travelling salesman.

* * *

The July Golf Outing of the New York Division of the Salesmen's Association of the Paper Industry is being held at the Leewood Golf Club today, Thursday.

* * *

The annual convention of the Wall Paper Association of the United States began at the Hotel Commodore, New York, on Monday, and will continue until Saturday, July 26.

* * *

Application to list 156,000 shares of common stock (no par) of the A. P. W. Paper Company, Inc., Albany, N. Y., is pending before the committee on stock list of the New York Stock Exchange.

* * *

The National Wallpaper Wholesalers Association met in semi-annual session at the Hotel Commodore on Monday. President Justin Allman, of Philadelphia, was chairman of the business meeting in the morning and at the banquet in the evening.

* * *

Champion Coated Paper Company will entertain a party of New York printers at its mills at Hamilton, Ohio. The party left New York yesterday, Wednesday, and will spend four days in an inspection of the mills, golf and other activities.

* * *

Frank Floyd, executive secretary of the National Paper Trade Association of the United States, announces that the annual Fall meeting of the association will be held at the Stevens Hotel, Chicago, on Ocober 6, 7 and 8.

* * *

G. A. Ware, of the News Print Service Bureau, addressed the members of the Paperboard Industries Association on "Control in Comparative Cost of Operating" at a meeting of the association in the Commodore Hotel, New York, on Wednesday, July 23.

* * *

R. S. Kellogg, secretary of the News Print Service Bureau, and his wife, left New York on Tuesday for Waterville, New Hampshire, to attend the summer meeting of the Northeastern Forest Research Council on July 24 and 25. Following the convention, Mr. Kellogg will visit news print mills in Maine, Nova Scotia and New Brunswick.

* * *

Net profit, after charges and taxes, of Lily-Tulip Cup Corporation, New York, for the six months ended June 30, last, amounted to $439,105, equivalent after preferred dividends to $2.34 a share on the outstanding 183,000 no-par shares of common stock. This compares with $356,661, or $1.89 a common share, in the corresponding period of last year.

* * *

Mrs. Robert Robertson, wife of the veteran English paper maker engaged at Dard Hunter's Paper Mill, at Lime Rock, Conn.; their son, Reginald; and their daughter, Gladys, arrived in New York last Friday, aboard the Cunard liner *Mauretania*, to make their home at Lime Rock. Tom, the eldest son, is already here working with his father at the famous hand made paper mill.

* * *

Mathieson Alkali Works, Inc., New York, reports for quarter ended June 30, 1930, net income of $565,687 after depreciation, depletion, federal taxes, etc., equivalent after dividend requirements on 7 per cent preferred stock, to 81 cents a share on 650,380 no-par shares of common stock. This compares with $541,946, or 76 cents a share on 650,436 common shares in preceding quarter and $610,697, or 96 cents a share on 588,328 shares in June quarter of 1929. Net income for six months ended June 30 amounted to $1,107,633 after above charges, equal to $1.57 a share on 650,380 common shares against $1,117,371, or $1.75 a share on 588,328 common shares in first half of previous year.

* * *

Texas Gulf Sulphur Company, Inc., New York, reports for quarter ended June 30, 1930, net income of $3,648,345 after depreciation and federal taxes, but before depletion, equivalent to $1.43 a share on 2,540,000 shares of no-par stock. This compares with $3,803,701 or $1.50 a share in preceding quarter and $3,571,270 or $1.40 a share in June quarter of 1929. Net income for first six months of 1930 amounted to $7,452,046 after above charges equal to $2.93 a share, comparing with $7,451,530 or $2.93 a share in first half of previous year. During the last quarter the company increased its reserves for depreciation and accrued federal taxes, by $329,538, making total of these reserves $12,905,044 on June 30, 1930.

* * *

Prospect Park, Brooklyn, on July 17, was the scene of a well played game of the national pastime between teams from Marquardt, Blake & Decker and Whitaker Paper Company. Through the canny subway hurling of "Ros" Hunt and four smashing home run drives the boys wearing the livery of Marquardt, Blake & Decker administered a decisive beating to their competitors by a score of 11 to 4. The Whitaker batsmen socked three homers on their own account but most of the time were handcuffed by the mysteries of Mr. Hunt's subway curves. Jarman pitched well for Whitaker until the Marquardt "Murderer's Row" fell on him in the fourth inning and sent him to the showers. W. Moylan, Hines, Hunt and Martuscelli were the sluggers for the winners.

Pulp and Paper Purchasing Agents Organize

At the convention of the National Association of Purchasing Agents, held in Chicago, June 16 to 19, a new group was formed within the organization which comprises the purchasing agents who are connected with pulp and paper manufacturing concerns.

George W. Browne, purchasing agent of the A. P. W. Paper Company, Albany, who has been made president, writes:

"It is our intention to bring these men together so that we may have an exchange of ideas and discuss difficult problems in order to be prepared in any emergencies that may arise to eliminate costly disasters.

"We are endeavoring to make known the formation of this group to all men in the purchasing profession whether members or non-members of the National Association. Of course, in order to become connected with this group it is necessary to become affiliated with the National Association. We are at the present time circularizing our National members in order to advise them all of the formation of this group and to get them interested in becoming active members.

T. C. Latham, of the Fort Orange Paper Co. is secretary.

James Salter to Visit in South Wales

FULTON, N. Y., July 21, 1930.—James Salter, superintendent of the Victoria Paper Mills Company at Fulton, N. Y., has left on the S. S. Baltic of the White Star Line for an extended tour of his old home in South Wales and the Continent. He expects to be gone ten weeks at least. Mr. Salter has been with the Victoria Paper Mills Company for the last sixteen years. He was called to the main office of the company and presented with a very fine traveling bag by his associates. Mr. Salter has had wide experience on lightweight papers, having worked in many of the large mills in the United States and Canada.

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BUSINESS IS SOUND

Answering pessimistic reports being generally circulated on depressed business conditions and the causes thereof, more than 200 engineers specializing in management, manufacturing and merchandising work in industrial organizations throughout the country declare that the foundation of American business is sound and fears of a sustained period of depression are not justified.

The engineers, after months of investigation, emphasize that existing difficulties in industry can be attributed to shortcomings in management and lack of understanding of fundamentals that control the entire economic system of the country, with a failure to apply remedial measures to offset the mounting economic conflicts and difficulties that have arisen.

This report has been made by John F. Sherman, chairman of the board of the Sherman Corporation, on the basis of surveys made by his engineering associates in every representative field of business activity. The engineers have studied every angle of industrial activity, from the production of raw materials, through all the processes of manufacturing and distribution, to retailing and consumer demand.

The consensus of opinion of the engineers is that the foundations of industry are sound, and the great need of business is to study the underlying causes of the present depression and correct them by progressive principles of management based upon research in individual industries.

"Business is what you make it," is the keynote of the engineering report made by Mr. Sherman. This, he declares, applies to every line of industrial activity and reflects actual conditions as found in the analysis of business conditions by his engineers.

"The call today," says Mr. Sherman, "more than ever before, is for specialization in industry to cope with every difficulty that has developed in every branch of our industrial life. In hundreds of business enterprises, executives have realized that special problems of management, manufacturing and merchandising call for special analysis and treatment."

Mr. Sherman stresses the fact that the observations in his report represent, not a single group of industries, but the entire business structure of the nation—the aggregate analysis of economic conditions as a whole.

The extensive survey reveals that there are no basic conditions undermining industry, and emphasizes that the current depression will pass with the correction of existing defects in industrial procedures. The engineers are fully convinced that by adequate measures of rehabilitation based upon research, business will be restored to normal in a short while and the lessons learned will be of permanent value in industrial management.

Mr. Sherman takes a firm stand against the prevailing pessimism. According to all reports of his engineers, he states, conditions are not nearly so serious as they have been represented to be. He points out that the calls from leaders of industries for specialized engineering analysis and assistance proves that leaders of business realize the growing need of research and engineering principles in reading a solution of economic problems.

"The financial condition of the country," Mr. Sherman reports, "is unquestionably sound, and gold reserves are plentiful. We are a strong creditor nation and our exports continue to exceed our imports. The new tariff momentarily has had a psychological effect, but the flexibility of its structure will avoid any serious consequences.

"Retail sales are only 3 per cent under the peak year. In fact, in terms of items sold, they probably exceed those of last year, after giving effect to the reduction in retail prices.

"There is a minimum of surplus stock on hand, excepting for a few raw materials such as sugar, cotton and wheat. Natural laws and developments will care for their consumption within a reasonable time. Save for the excesses of such few raw commodities and the low prices which they consequently bring, there are none of the evidences present which make for panic or a long period of business depression. A recession of two years' progress is no cause for alarm.

"There are 120,000,000 people in the United States to feed, clothe and house, and our domestic market, plus our foreign markets, will meet our productive capacity, provided the management of industry looks the situation squarely in the face and applies remedies to cure existing industrial ills.

"The employment capacity is given at 95 per cent of normal. A drop of 5 per cent in employment is not serious enough to affect the economic structure of the country or its people. Employment curtailment has generally been conducted in a more scientific and less injurious manner than in previous times. Hours of work have been reduced, and lay-offs have been staggered instead of the earlier method of wage cutting. So there have not been any serious consequences due to unemployment.

"An analysis of reports of business conditions yields no cause for alarm. Reported average corporation earnings are on a par with 1928. Statements of corporations, in the main, show that their current earnings are sufficient to cover their dividend requirements. Accumulated surpluses are generally large.

"Even stock-market prices, with all the harrowing cries of panic, are no lower today than they were in 1928. Money rates are low. Banks are growing more liberal in their industrial loans, and in consequence expansion is possible for a great number of industries.

"An indication of the sound condition of the country is the

growth of savings accounts, an unfailing barometer of progress. There has been a steady increase in deposits in savings banks, a recent report giving the amount of such deposits in the country as $29,000,000,000—a sufficient surplus to draw on in continuing to satisfy consumer needs and habits.

"It is axiomatic that consumption does not drop off in times of depression as rapidly as does production, and, conversely, production lags in resumption considerably after consumption increases. This soon results in a shortage."

Summarizing the report made by more than 200 engineers in industrial organizations throughout the country, Mr. Sherman holds that most of the contributing factors in the American industrial field today are encouraging.

He urges that advertising should be continued as a means for stimulating and encouraging trade. The more progressive companies are making plans for increased advertising.

The industries that improve their merchandising methods and adjust their operating conditions along more efficient lines, he says, will continue to forge ahead.

Business leaders today realize, says Mr. Sherman, that research and scientific principles of management are all-important in keeping business on the upgrade. Over $200,000,000 annually is being spent in industrial research, which promises to develop new industries sufficient to take up the slack caused by labor excess, resulting from mechanical labor-saving devices.

"The present period," Mr. Sherman declares, "offers an extraordinary opportunity for aggressive organizations with foresight and courage to outdistance their competitors. The executives who give careful thought to management and proceed with optimism will win over those who cling to old methods and are pessimistic."

To Expand Multi-Wall Bag Business

[FROM OUR REGULAR CORRESPONDENT]

OSWEGO, N. Y., July 21, 1930.—With the acquisition of the Bates International Bag Company by the St. Regis Paper Company it was announced this week that plans were under way for introducing its multi-wall paper bag business in many foreign countries. The extent of the foreign business handled by the Bates International Bag Company is indicated from the increase in sales during the past five years. Sales of multi-wall paper bags used for packing cement and other products turned out by the company and its foreign subsidiaries increased from 800,000 bags in 1925 to 138,000,000 bags in 1929 which is ample proof of the expansion of the business. With the new foreign subsidiary St. Regis is now provided with coverage in virtually all parts of the world for the development of Bates patents on multi-wall bags and bag manufacturing machinery.

Newhouse Paper Co. Organized

MINNEAPOLIS, Minn., July 21, 1930.—Organization of The Newhouse Paper Company with offices in St. Paul, Minneapolis and Des Moines, was announced Saturday.

The company was formed by Ben F. Newhouse of Minneapolis following his purchase of the northwest division of the Seaman Paper Company, which he organized in 1914 and with which he has since been associated. The new company will maintain all paper mill connections held by the Seaman Co., Mr. Newhouse said.

Associated with him in the new company are T. S. White, in charge of the St. Paul office at 1507 Pioneer bldg., J. C. Marvin, C. J. Duffy, A. H. Voss, A. J. Savard and George Barnes.

Crystal Tissue To Have New Building

[FROM OUR REGULAR CORRESPONDENT]

MIDDLETOWN, Ohio, July 21, 1930.—Ground has just been broken for a new general administration building for the Crystal Tissue company, North Excello. To this building will be transferred all of the executive and business operations of the firm within a few months.

Z. W. Ranck, in announcing the new office building, stated that this is the propritious time for the erection of new and more adequate quarters, looking to a bigger market for the Crystal Tissue porducts.

In announcing plans for removal into the new office building, Mr. Ranck says that a feeling of regret in leaving the present office—known to be one of the old landmarks of North Excello—occupies the entire organization. Deep-rooted sentiment is attached to the old office building, formerly one of the palatial residences of the village, for all business employes of the company.

The new building will co-ordinate all departments of production and sales, enabling the more efficient facilitation of routine work.

Contract for the building was awarded the Caldwell & Iseminger company. Following its well known civic spirit, the Crystal Tissue company insists that local workmen be employed in the construction of the building. It is estimated that work on the new office will be completed by January 1, 1931.

It will be a two-story structure, built of variegated cream-colored brick and trimmed in Bedford limestone. It will be erected at the entrance to the Crystal athletic field.

A simple dignity will mark the building, which will follow the most modern type of construction. The new Breaker system of electrical wiring will eliminate the use of fuses. The office window frames will be of the projected type, the windows themselves to tilt inward or outward, providing fresh air without direct drafts.

As visitors enter the building, they will be received in a large ornamental reception room by the office secretary. Next to the reception room will be the display room of Crystal products. In a few moments visitors can see the complete range of the many items which the company is selling throughout the United States and many foreign countries.

On the ground floor will be the offices of the superintendent, chemical engineer, research and plant laboratory, employment and development engineering. The sample department and the file room also will be on this floor.

On the second floor will be the president's office, directors' room, treasurer's office, secretary, assistant secretary, sales offices, auditor, purchasing, cost accounting, and a general conference room.

Contracts have also been awarded the Caldwell and Iseminger company for a new building housing three tissue machines and the finishing room of the old Crystal mill. This work has already started. The building will be a strictly modern factory of concrete, brick and steel construction, two stories high, 88 feet by 166 feet. It is being built over the present machine room and finishing room without interfering with manufacturing operations. When the new building is completed, the old construction will be torn out without stopping any of the regular production. This part of the construction will be started by October 1.

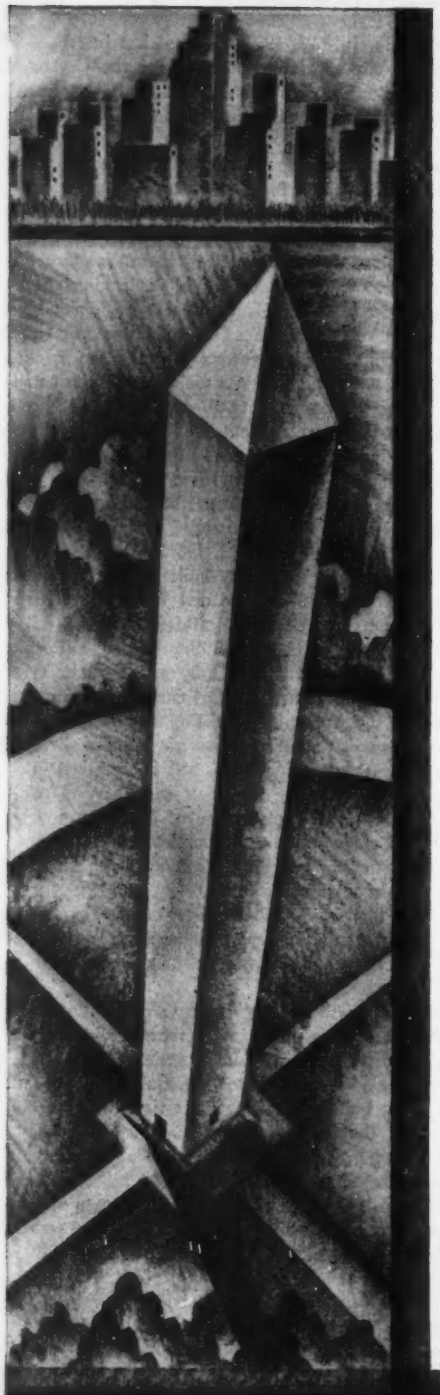
In addition to this construction program, the company's paper machines are being modernized thoroughly.

The cost of the improvements will total $250,000.00, officials of the company estimate.

Bids for Government Paper

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., July 23, 1930.—The Government Printing Office has received the following bids for 50,000 pounds of 20x30 binders board: Barton, Duer & Koch Paper Company, at 5.5 cents per pound; R. P. Andrews Paper Company, 5.5 cents; Consolidated Paper Company, 5.5 cents; Dobler & Mudge, 5.5 cents; Perkins-Goodwin Company, 5.5 cents.



Those who would build well . . . must build on STRONG FOUNDATIONS!

By CARL R. MILLER

No. 4 in a series of advertisements describing the position of The Mathieson Alkali Works in the chemical industry.

WHEN you look upward to the topmost stone of a towering monument you see its tremendous height...but you do not see the deep-lying foundations that support the structure. Likewise, when you purchase Mathieson products you may not realize how deep-set are the foundations of Mathieson service.

The Mathieson name on chemicals is a symbol of the highest quality products that modern science, modern methods and modern equipment can produce. Processes that have taken years to perfect ...equipment that represents an investment of millions...technical knowledge of chemical manufacture born of years of research — these are a few of the foundations responsible for the fact that Mathieson products serve you better and give you uniform results.

Send for list of available literature describing various uses of Mathieson chemicals.

The MATHIESON ALKALI WORKS *(Inc.)*
250 PARK AVENUE NEW YORK, N. Y.
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Works: Niagara Falls, N. Y.—Saltville, Va.
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MATHIESON CHEMICALS
SERVICE
RESOURCES | RESEARCH
Great Structures Rest on Strong Foundations

MATHIESON CHEMICALS

Soda Ash...Liquid Chlorine...Bicarbonate of Soda...HTH (Hypochlorite)...Sulphur Dichloride...Caustic Soda...Bleaching Powder ...Ammonia, Anhydrous and Aqua...PURITE (Fused Soda Ash)

Section of the
Technical Association of the Pulp and Paper Industry
Edited by Ronald G. Macdonald, Secretary

Some Problems in Converting Board to Cartons *

By H. L. Rammer [1]

It is the purpose of this paper to discuss only those problems confronting the carton manufacturer which are due to the usual defects in the board itself. Under our present conditions of intense competition the board manufacturer is not so much concerned with making an ideal sheet as he is with arriving at an economic balance of the requisite qualities.

Moisture Content of Paper Board

The moisture content of paper board is apparently the largest source of difficulty. A sheet that is too dry is not often encountered since for obvious reasons the tendency is to run to the other extreme. Dry board will, through absorption of moisture and resulting expansion, cause register trouble in the process of printing. In cutting and creasing the sheet will tend to break up and the cartons themselves will crack on the scores. Excess moisture is a worse offender. Like dry board, it causes register trouble and with a more pronounced effect. The cockling and warping that results as the board dries causes difficulty on the deliveries of both the printing and the cutting and creasing presses. The drying of printing ink is very distinctly affected by the moisture content of the board. On wet board if the ink dries at all it does so very slowly. Further processing is delayed, the ink smears and often dries out with a dead, flat, chalky appearance. A damp carton is naturally a flabby one and as such does not line up properly on the gluer.

The moisture content of paper board should vary as its thickness. The very light boards (.018 inch and under) should carry 6 per cent water and not exceed 7 per cent. The medium boards (.018 to .030 inch) can carry an additional 1 per cent and the very heavy boards work best with a moisture content from 8 to 9 per cent. Nine per cent should not be exceeded in any case.

Moisture determinations at regular intervals while the board is being made is the best means of control. However, control that is almost as accurate can be had by simply handling the sheet, checking the "bender" and noting the appearance of the sheet itself. Devices for the automatic control of moisture in paper and board have begun to appear and with their advent moisture will be eliminated as one of our problems or at least its effect will be greatly diminished.

A board that is a poor bender passes through the printing department with no difficulty but to the cutting and creasing department it is a plague. As stated above, cracked scores may be due to dryness but ordinarily the trouble lies with the stock in the top liner; the fiber is too short. The original liner furnish may have consisted of too much short fibered, weak stock to begin with, or the stock originally strong, may have beaten and jordaned too severely. To go further, the speed at which the machine was run may have necessitated this severe treatment in order to maintain good formation. In brief, if cost can be disregarded a "door hinge" bender can be made without the slightest difficulty. But cost must be considered and the board maker must adjust the various conditions to strike that economic balance and get a passable bender.

Fuzz on paper board surfaces often becomes a serious problem; its effect on printing is obvious. Our experience has shown us that starch very effectively eliminates fuzz and there seems to be no reason why it will not do so in every case. The controversy—cooked starch vs. uncooked starch—still rages, particularly among the older board makers. To do what is desired of the starch it must be in a cooked or gelatinized form and it is better procedure to know that it is gelatinized than to add it raw, as it were, and rely on the driers cooking an indefinite portion of it. It could be proven, no doubt, that retention is greater with raw starch, but of what value is the higher retention of a considerable portion of the retained starch if it is acting only as a filler?

A highly finished, smooth board is of importance to the printing department. This is attained only through the use of finer woven felts and more calendering. The former means less water removal at the wet end and more felt trouble due to filling up, etc.; the latter means a loss in area per unit weight of board. Both of these are costly and here again the board maker must find the conditions that most nearly satisfy both his demands and the printers.

Peeling of the liner is not often encountered. It may occur when the sheets are being handled prior to printing and in that event the strips of peeled liner caused mashed plates and attendant difficulties. Those converting machines, having a friction type of delivery, will ruin the cartons made of board with a peeling liner. This tendency to peel is apparently due to the difference in degree of hydration and fiber length between filler stock and liner stock. The remedy requires either a change in the furnish or a change in the amount of beating and jordaning or both.

Variation in caliper, if at all marked, means trouble to the board converter. With board that runs under caliper the printing impression is too light, with heavy board the reverse is true and the tendency of the greater pressure is to spread and blur the outlines and fine lines of the job. In cutting and creasing similar effects due to variable pressure are had. Board that is much in excess of the thickness the press has been made ready for, will be cut to pieces or else scored too deeply and cracked. Light board will be insufficiently creased and not completely cut through. Close and frequent inspection at the board machine eliminates a great deal of caliper variation, but the fluctuation in caliper is almost an inherent fault in the manufacture of board. Consistency regulators and automatic caliper controls will, as they become perfected, do away with this problem entirely.

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 19, 1930.

[1] Member TAPPI; Chief chemist, Fibreboard Products, Inc., Stockton, Cal.

The Copper Number Test*

By Jos. H. Burgen[1] and Jessie E. Minor[1]

While the copper number has been a popular subject for chemists for some time, it is comparatively recently that technical papermakers have been besieged with copper number data. For the benefit of those who have not taken the time to study the principles involved, the following review is given:

Principal Factors

In analyzing the factors which enter into the strength of papermaking fibers, there should be distinguished,

1st, The *atoms* with their extending forces which bind them together in definite patterns.

2nd, The *molecules,* or unit building blocks, composed of atoms held together in a definite structure by strong, primary bonds.

3rd, The *micelles,* or aggregates of molecules, held together by forces of secondary intensity.

4th, The *fibers* built up of micellar aggregates which are held together by forces which are of a third order of intensity.

Balance of Forces

The entire structure of the fiber is characterized by the completeness of the balance of internal forces and, therefore, represents the greatest possible strength obtainable from any arrangement of material and forces at hand. Any outside agent which tends to disturb this balance and force a rearrangement necessarily leaves the fiber weaker. These forces may be mechanical or chemical or both.

Action of Water and Air

Pure water may enter the spaces between the micelles causing swelling and be again expelled by heat without disturbing the fiber structure. But when the water carries impurities which exert affinities for the atoms on the surfaces of the micelles, the close proximity of the attracting forces, with or without effect upon the primary bonds, is apt to disturb the balance of secondary bonds, forcing a rearrangement which is less well balanced and, therefore, weakening the fiber, though not necessarily disturbing the permanence factor. Mechanical forces are more apt to disturb the micellar forces, though they may also aid in the molecular degradation. Oxygen of the air alone will probably never attack a pure fiber but it becomes active in the presence of such chemical forces as iron, manganese, lignin, rosin, etc., which are themselves very reactive towards oxygen and which, when close to a fiber, serve as attractors which draw oxygen of the air and fix it on the cellulose molecules. Certain rays of violet and ultraviolet light are also active in aiding the fixation of oxygen upon fibers.

Fiber Degradation

Any degradation of a fiber may follow one or more of three distinct courses:

1st, It may pull apart the micellar structure, thus breaking the fibers or weakening their strength without necessarily injuring the permanence.

2nd, It may hydrolyze the molecules. This change is normally shown by the development of the power to take oxygen from active oxidizing agents, usually called the reducing power. The test for this reducing power is called the copper number. The process of hydrolysis is usually the result of strong acid attack. It may continue to the complete destruction of the molecule without any oxidation occurring and it gives a final product which has no reducing power.

3rd, It may oxidize the molecule. The first stage of this process is again the development of reducing power but, owing to the nature of the agent of destruction, the next step is the taking on of oxygen to form organic acids which also have no further reducing power.

In practice these processes are seldom distinct. It is difficult to get any appreciable pulling apart of the fiber structure without at the same time developing the reducing power on some of the surface molecules. Again, any development of reducing power is apt to be accompanied by a decrease in the size of the micelle and by some true oxidation.

In the early stages of normal degradation, the predominating feature is the decrease in the size of the micelle structure, but with increasing surface exposure on the smaller micelles and decreasing stability of structure, the chance of attack on surface molecules increases until the development of reducing power becomes the dominating course of the process. Therefore, if we want to discover the possible damage to rags in the course of manufacture into half stuff, we will probably make the viscosity test before and after each mill operation as most indicative of the amount of change due to that operation, though we will expect the copper number to increase slightly as the viscosity decreases. On the other hand, if we are interested in the degradation of an ordinary paper in which the viscosity is already quite small, the copper number will probably be the more sensitive test.

Copper Number Measures Rate of Degradation

There is also another respect in which the copper number differs from the other chemical tests for degradation. While the viscosity and alpha tests determine the total amount of loss by degradation and only express *rate* of attack when it is possible to make the tests before and after a definite period of time or a definite operation, the copper number in itself is *a direct measure of the rate at which the reaction is progressing,* since it records the amount of fiber which is at the moment of test in an intermediate stage of degradation. Therefore, of all the tests, the copper number should give the most information when an immediate estimate of permanence is desired and only one sample is available.

Effect of Degraded Cellulose

There is probably no evidence in the literature to warrant the assumption that degraded cellulose is in itself harmful to the future life of a fiber, therefore, for permanence estimation, we are interested in the rate of present disintegration rather than in the amount of previous action. For instance, worn rags may have been harshly treated in textile manufacture and wear and may show a very low viscosity parallel to a low strength, but if they have been properly purified in paper manufacture so that no degrading agent remains as an impurity, and if the paper is not subject to physical stress beyond the endurance of the paper, the worn rag paper may be very permanent. If, however, such a worn rag paper shows a very high copper number, which must have developed after the alkali cook, the indications are of active deterioration and the chances of permanence are slight.

In a summary at the end of a long report in the Journal of the Textile Institute, 18, T135 (1927) on the effect of degraded cellulose products upon the rate of disintegration of cotton fibers, the authors state that, "An examination has been made of the rate of oxy- and hydro-cellulose formation from cotton already slightly modified by definite chemical treatment, but no evidence of enhanced susceptibility was found in the many cases studied. . . . Results appear to be purely additive and the effect of two successive actions may be calculated by adding together the separate effects produced by the two agents acting independently upon unmodified cotton."

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* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 19, 1930.

[1] Member TAPPI: Chemist, Rag Content Paper Manufacturers Laboratory, Springfield, Mass.

In the cases of continued degradation of paper, in view of the above, we must look for the cause in some impurity or outside force acting upon the fibers. When this force is removed the degradation should cease completely, though the decreased strength will leave the paper more susceptible to attack by other agents.

The evidence from the extensive work of the British Textile Institute also indicates that for degradation due to acid treatment of cotton, the copper number, viscosity and fiber strength changes are parallel, independent of the kind of acid, the temperature or time of reaction or the moisture present except when the acid is dried upon the cloth at a temperature above 70 deg. C. They find that the copper number increases 50 per cent when the time of contact with the acid is doubled and 2.3 fold for a 10 deg. C. rise of temperature, that a loss of 10 per cent in the breaking load corresponds to a rise of .25 in the copper number and a loss of 80 per cent in the breaking load to an increase of 3.5 in the copper number. For a degradation due to oxygen attack, there are other disturbing factors and the relation may not be figured so definitely unless conditions are very well controlled.

Copper Number Interpretation

While the copper number test is undoubtedly a most important test for fiber permanence, its manipulation and interpretation is far from satisfactory and the literature is full of questions as to its worth. The greatest difficulty is that, like the alpha test, the results may only be duplicated when conditions are accurately repeated each time, making it difficult for one worker to check another. A very complete investigation and criticism of this method was published by C. A. Amick in the Journal of Physical Chemistry, 31, 1441-77 (1927). Among other criticisms he states that the amount of reduction by this method varies widely with the alkalinity of the solution and the method may be made to give any concordant results which one desires. Other errors arise from the alkaline tartrate solution and from the effect of the iron alum upon the permanganate. But this difficulty with the theoretical aspects of the method does not warrant our discarding a test which has yielded such excellent information and for which we have no better to substitute.

Determination of the Copper Number

The copper number is defined as the number of grams of copper which may be reduced from the blue cupric salt to the red cuprous oxide by 100 grams of fibers. It is a measure of the percentage of the molecules which have been so altered as to be susceptible of future oxidation. These reactions usually begin on the surface of the fibers and work progressively into the interior.

There are today three distinct types of methods for determining the copper number, all of which have their advocates. The history of the development of each of these methods has been so frequently reviewed that it will not be attempted here.

1. The first type of method is based upon the original method of Schwalbe published in 1912. This method was modified in 1919 by Hagglund to use ferric alum to measure the amount of reduced copper, thus decreasing the amount of labor involved in the original method. In 1925 Staud and Gray made a thorough study of this method and proposed that the time of boiling be increased from 15 minutes to 45 minutes. This method is largely used today for wood pulp testing.

2. The second type of method to attract attention was proposed by H. Braidy and by Koehler and Marquerol independently. In this method the cooking liquor is a mixture of sodium carbonate and bicarbonate and the digestion is continued for three hours on a steam bath. The amount of reduced copper is determined by the use of ferric alum as in the Hagglund method. This method is largely used in the textile industry and is said to bring out slight differences more clearly than does the more drastic alkali cook.

3. The third type of method in popular use was suggested by Fontes-Thivolli and used in some extensive researches by Gault and Mukerji in 1924. In this method the alkaline Fehling solution is used but the ferric alum is replaced by molybdophosphoric acid which gives a very sharp end point in the subsequent titration. In 1927 the Bureau of Standards at Washington published a modification of this method which they recommend for its convenience for mill control testing. In their method the liquid is boiled in a bath of 30 per cent calcium chloride at a temperature above 100 deg. C. for 30 minutes without stirring, depending upon the vigorous boiling for the agitation.

In recognition of the extensive amount of work done by Schwalbe on the copper number test, it was proposed by Clibbons and Geake in 1927 that the name of all methods be prefixed with the name of Schwalbe; thus we have today the Schwalbe-Hagglund method, the Schwalbe-Braidy method and the Schwalbe-Gault method.

Schwalbe-Braidy Method

In taking up the work of the study of the factors which enter into the permanence of high grade papers, after carefully reviewing the details of the various methods of testing for copper number, the Schwalbe-Braidy method was chosen as one which:—

1. Did not use an alkali which would cause further degradation.
2. Did not use the tartrate solution with ferric alum.
3. Gave results which were reasonably easily reproduced.
4. Brought out fine distinctions which seemed consistent with other considerations.
5. Seemed to more nearly represent the true reducing value of the material.

Copper number method used in the laboratory of the Rag Content Paper Manufacturers. Adapted from the Schwalbe-Braidy method:

SOLUTION REQUIRED:

A. Copper sulphate, crystal .....100 grams per liter.
B. Sodium carbonate, anhydrous .....130 grams and
Sodium bicarbonate .....50 grams in
Water .....1 liter.
C. Ferric sulphate .....40 grams, and
Sulphuric acid, concentrated .....140 cc. made up with
Water to .....1 liter.
D. Sodium carbonate .....5 per cent solution.
E. Sulphuric acid .....5 per cent solution.
F. Potassium permanganate .....one-twentieth normal.

Procedure

A solution containing 5 cc. of solution A and 95 cc. of solution B is heated to boiling in a beaker. In another beaker 1.5 grams of air dried ground fibers accurately weighed is thoroughly wetted with the solution. The fibers are transferred to a 100 cc. Erlenmeyer flask with a glass rod and the beaker is rinsed with the remainder of the solution prepared above. The Erlenmeyer flask is stoppered with a cork containing an air condenser tube of about ¼ inch diameter and about three-foot length and is immersed in a constant level wather bath for three hours. Immediately after removing from the bath the contents of the flask is filtered through a No. 44 Whatman filter paper on a 4-inch Buchner funnel. The fibers are washed with 100 cc. of sodium carbonate then with 250 cc. of hot water. The filtrate is discarded and the flask rinsed. The matte on the filter is then rinsed with 25 cc. of the ferric sulphate solution in two portions of 10 and 15 cc. each. I then washed with 100 cc. of sulphuric acid followed by 100 cc. of hot water. The filtrate and washings are then transferred to a 600 cc. breaker and titrated with the 20th normal potassium permanganate in the cold.

Calculation: The copper number is equal to the copper value of the permanganate solution used (.00317 × the number of cc. used × 100) divided by the weight of the sample in grams.

The Determination of the Volumetric Composition of Paper *

By Parker K. Baird [1] and C. E. Hrubesky [2]

Synopsis

A tentative method for the determination of the volumetric composition of paper and paper board, comprising the following procedures, has been developed at the Forest Products Laboratory.

1. The dimensional volume is determined from the size and the mean thickness of the sheet.

2. The solid fraction (by volume) and the average specific gravity of the solid component are calculated from the percentage by weight and the specific gravity of each of the constituent materials of the paper, or from the specific gravity of the paper as a whole and its weight when dry.

3. The liquid fraction is determined from the loss in weight on drying, distillation, or extraction.

4. The total air fraction of pores, recesses, and voids is obtained from the difference between the dimensional volume and the solid-fraction volume, or in simple papers, in which the void volume is negligible, by procedure No. 5.

5. The combined pore and recess volume is determined by means of the gas-expansion method described in this article.

6. The void volume is determined from the difference between the total air fraction and the combined pore and recess volume.

7. The fractional pore area of the paper is determined by an electrical conductivity method.

8. The average effective pore radius and the total number of pores per unit area of paper are calculated from the results obtained from procedure No. 7 and from the flow of gases or liquids through the paper as measured with the differential pressure-drop apparatus described in this article.

9. The effective radius of the largest pores in a sheet of paper is calculated by Jurin's law after measuring the gas pressure required to displace a liquid (either water or a non-swelling liquid) from the pores, with the apparatus also described herein. A comparison of the maximum radius thus determined with the average value given in procedure No. 8 will give a value indicating the distribution of the sizes of the pores.

A combination of the nine determinations outlined thus makes it possible to characterize a sheet as regards each of its major components.

The detailed procedures and the data collected up to the present have been reserved for a future publication.

Introduction

In the evaluation of manufactured paper in terms of its use requirements, employing engineering methods, the properties of the piece as well as those of the material must be known. Several of the piece properties requiring accurate measurement are no doubt closely related to the volumetric composition, which is the fractional volumes of solids, of air, and, occasionally, of liquids in a sheet of given dimensions. The work reported here concerns a tentative method developed at the Forest Products Laboratory to determine the total air volume and the fractional parts of this volume, which is comprised of voids, recesses, and pores, and also to determine the number and size distribution of the pores. The experimental results obtained up to the present, however, will be reserved for a future report in which an attempt will be made to correlate the piece properties of a sheet of paper with its volumetric composition.

Investigations are also being carried on to identify other physical and physico-chemical properties of the material and to develop methods for their determination.

Composition of Paper

The volumetric composition of paper is the combination of fractional volumes of the phases that form the sheet; namely, air, solids, and liquids. The fractions are expressed in percentage of total volume. These phase fractions may be further subdivided for the solid and liquid phases into the chemical components making up the paper, and the air phase may be subdivided into fractions according to the extent of enclosure of the air by the other phases; namely, voids, recesses, and pores.

A knowledge of the minute volumetric composition of paper is desirable for the duplication of the characteristics of paper. It is hoped that such knowledge and the further knowledge of the strength properties of various papers can be so correlated that in the future paper, as a structure, may be designed with engineering precision.

The solid fraction represents the fiber, filler, solid chemicals, sizing, and so forth that constitute what is generally thought of as paper. For a determination of the ultimate volumetric composition of the solid fraction, a quantitative analysis and a specific gravity determination for each of the component parts is necessary.

The liquid fraction is not always determined, although in some instances, such as oiled papers, a definite determination may be desirable. The moisture content usually present can in general be considered a part of the solid fraction, but must be determined for a proper characterization of the paper.

The air fraction represents the total air in a sheet of paper. This air may be distributed throughout the paper in three different ways: It may occupy spaces that, with respect to the air, do not communicate with either surface, that communicate with one surface only, or that communicate with both surfaces. In this study these spaces were called voids, recesses, and pores, respectively.

Determination of the Solid Fraction and Its Composition

To obtain the composition of the solid fraction, the percentages by weight of the components are determined quantitatively by chemical analysis. The volumes of the various components can be calculated from this analysis and a determination of the respective specific gravities can then be made.

The solid fraction may also be determined by the gas-expansion method if the paper does not contain voids. This matter will be discussed later in this article.

Determination of the Liquid Fraction and Its Composition

The moisture content of the paper can be determined by the ordinary oven-drying method when no volatile oils are present. In the presence of volatile oils either a dry distillation or distillation adding a volatile liquid other than water and subsequent condensation and measurement of the distillate is necessary for determining both tthe moisture content and the content of other liquids. The selection of the procedure, which depends upon the paper to be analyzed, will be reported in detail in a future publication.

The authors wish to thank Dr. A. J. Stamm for valuable advice in developing certain theoretical phases of the work dealt with in this report.

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., Feb. 18, 1930.

[1] Member TAPPI, Senior Chemist, Forest Products Laboratory, Madison, Wis.

[2] Assistant Chemist, Forest Products Laboratory, Madison, Wis.

Determination of the Air Fraction and Its Constituent Parts

The methods used to determine the total air fraction and its constituent parts follow.

TOTAL AIR FRACTION

The total air fraction is obtained by difference between the dimensional volume and the volume of solids calculated from the percentage by weight and the specific gravities of the respective solids.

If the total air fraction of a complex paper is desired without making a determination of the composition of the solid fraction, the total volume of solids is calculated from the dry weight and specific gravity of the paper as a whole. The specific gravity of the paper substance is determined pycnometrically.[3] In simple papers, in which the void volume is negligible, the total air fraction may be obtained by the gas-expansion method adopted for determining the pore and recess volumes in complex papers, where voids do exist.

PORE AND RECESS VOLUMES: For the determination of the combined pore and recess fractions, a method of Washburn and Bunting[4] for determining the porosity of bricks and clays was adopted. The method is based upon the drop in pressure of a definite volume of gas when the gas is allowed to expand into a partially evacuated cylinder containing the material under test.

The determination is carried out, as follows, in a modification of the apparatus used by Pressler[5] for ceramic materials: A container, B, of volume V_b is joined through a tube carrying a stop-cock to a vessel, A, of volume V_a (fig. 1); the volumes of the connecting tubes should be added to V_a and V_b. To this vessel is attached a manometer for measuring pressure. A sample of the conditioned paper is rolled into tubular form and is placed in vessel A, and the central space remaining in vessel A is filled with a suitable brass rod of known volume. The vessel is then evacuated to a low pressure, P_o (10 to 20 mm. of mercury), and stop-cock f is closed.

[3] De Mosenthal: J. Soc. Chem. Ind., 26, 443 (1907). Davidson: J. Textile Inst., 18, T175 (1927). Stamm: J. Phys. Chem., 33, 398 (1929).
[4] J. Am. Ceramic Soc. 5, (8): 535-7 (1922).
[5] J. Am. Ceramic Soc. 7 (3): 154-9 (1924).

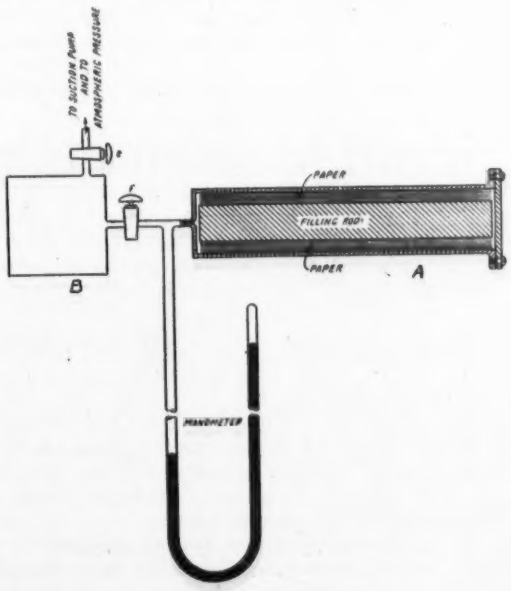

FIG. 1

Apparatus for Determining Total Air Fraction (By Volume).

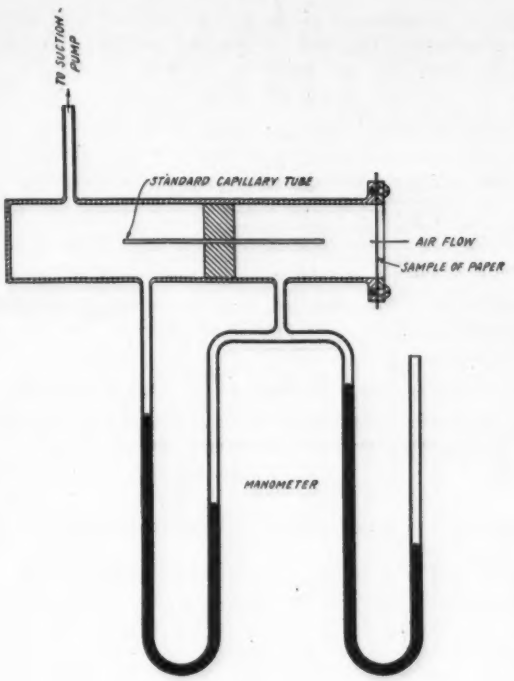

FIG. 2

Air-Flow Apparatus.

Container B is opened to the atmosphere through stop-cock e, to adjust B to atmosphere pressure, and after a moment is closed. Stop-cock f is then opened and the air from B is allowed to expand throughout the communicating air spaces of the specimen. The apparatus is maintained at a temperature of 70 deg. to 76 deg. F. When equilibrium is attained, the manometer reading P is again taken. The volume of the solids in the specimen V_s is found by the equation:

$$V_s = \left[\frac{PX - PoY - V_b\,(B-P)}{P - Po}\right] + V_a - V_r \qquad (1)$$

which is deduced from the gas law. B is the barometric pressure, V_r the volume of the brass filling rod, Y the volume of the manometer tube above the mercury before expansion, and X the volume of the manometer tube above the mercury after expansion; the other symbols have already been defined. The volume of the specimen may be calculated from its dimensions, and the value of the combined pore and recess fractions may then be determined.

THE FRACTIONAL PORE AREA: The fractional pore area is determined by an electrical conductivity method.[6] It is hoped that a procedure being developed in this laboratory for wood sections will prove applicable to paper.

The electrical conductivity of concentrated electrolyte solutions and their conductivity in the paper will be determined by a special cell in which the saturated paper will act as a partition between the electrodes. The conductivity of a volume of the electrolyte having the dimensions equal to the over-all dimensions of the sheet divided into the conductivity of the electrolyte solution in the sheet gives the fraction of the paper area that is pores.

THE AVERAGE EFFECTIVE PORE RADIUS AND THE TOTAL NUMBER OF PORES PER UNIT AREA: Since the pores, by definition, are the only spaces that allow the flow of liquids or gases through the

[6] Fairbrother and Mastin: J. Chem. Soc. (London) 125: 2319-30 (1924). Chem. Ind. 48; 373 T (1929).

paper, a determination of the average effective pore radius and the total number of pores per unit area of paper becomes possible by combining the results of pressure permeability studies and the fractional pore areas, using Poiseuille's law. This law may be formulated as

$$V = \frac{\pi r_1^4 P}{8\eta t} \qquad (2)$$

where V = volume in cubic centimeters of gas flowing through each pore per second
P = difference in pressure between the ends of the pores, expressed in grams per square centimeter
r_1 = average radius of the pore in centimeters
t = thickness of the paper in centimeters
η = coefficient of viscosity for the fluid flowing (for air at 20° C. = 0.00018)

If there are N pores per unit area of one surface of paper, the total volume V_1 of fluid flowing through the unit area of the paper will be

$$V_1 = NV = \frac{N\pi r_1^4 P}{8\eta t} \qquad (3)$$

and the volume of the pores per unit area of surface will be $N\pi r_1^2 t$ or the percentage of pores (by volume) V_p will be

$$V_p = 100\left[\frac{N\pi r_1^2 t}{V_t}\right] \qquad (4)$$

where V_t is the total volume of 1 square centimeter of paper t centimeters thick.

Since the pore volume of a paper, as defined herein, varies approximately inversely with the resistance to the flow of air through the paper, for any nominal thickness, the method of Emanueli[7] (fig. 2) for determining such resistance is applicable for the determination of the average pore diameter. Using this method, a measurement of the volume of air that flows through the paper in a definite time under a constant difference of pressure is unnecessary. Instead, the rate of flow of air through the paper is compared with that through a standard capillary tube by connecting a specimen of the paper and the capillary tube in series. Then, for the paper, under a pressure of P_1,

[7] Paper Tr. J. 85, (10): 48-50 (1927).

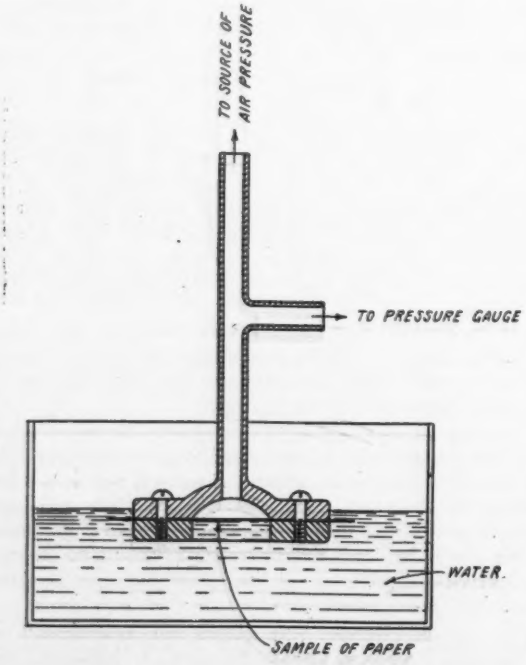

FIG. 3

Apparatus for Determining the Radius of the Largest Pores.

$$V_1 = \frac{N_1\pi r_1^4 P_1}{8\eta t} \qquad (5)$$

and for the capillary tube

$$V_2 = \frac{\pi r_2^4 P_2}{8\eta L} \qquad (6)$$

where L is the length of the capillary, r_2 its radius, and P_2 the pressure across it.

When equilibrium has been established in the manometers of the instrument,

$$V_1 = V_2$$

and hence

$$\frac{N_1\pi r_1^4 P_1}{8\eta t} = \frac{\pi r_2^4 P_2}{8\eta L}; \text{ or } \frac{N_1 r_1^4 P_1}{t} = \frac{r_2^4 P_2}{L} \qquad (7)$$

Solving for N_1

$$N_1 = \frac{r_2^4 P_2 t}{r_1^4 P_1 L} \qquad (8)$$

This equation, (8) gives the total number of pores in the active part of the specimen of paper when the average radius r_1 is known. The fractional pore area, S, of the paper determined by the conductivity method is

$$S = \pi r_1^2 N_1 \qquad (9)$$

Hence when r_1 is not known it may be found by combining equations (8) and (9), thus:

$$r r_1 = \sqrt{\frac{\pi r_2^4 P_2 t}{S P_1 L}} \qquad (10)$$

N_1 is then found by substituting in equation (8) the value thus obtained for r_1. In very thick papers or boards, if the pores are considered as circular capillaries running in all directions, that is, most of them not perpendicular to the surface, r_1 in equation (5) must be multiplied by 1.732[8] so that equation (10) becomes

$$r r_1 = \sqrt{\frac{\pi r_2^4 P_2 t}{9 S P_1 L}} \qquad (11)$$

THE MOST EFFECTIVE PORE RADIUS: The maximum pore radius can be calculated from the gas pressure required to displace a liquid (either a nonswelling liquid or water) from the pore. The method based upon Jurin's law and used by Stamm[9] for determining the capillary structure of wood is satisfactory for paper.

According to Jurin's law the elevation or depression of a liquid in a capillary tube is inversely proportional to the diameter of the tube; the rise or depression is dependent upon the surface tension of the liquid and the counter pull of gravity on the column of liquid. Thus the radius of the tube may be calculated from the equation

$$r = \frac{2\gamma}{hdg} \qquad (12)$$

if it is assumed that the angle of contact between the liquid and the tube wall is zero. In this equation γ is the surface tension, h the height of rise, d the density of the liquid, and g the acceleration of gravity, all in centimeter-gram-second units.

If the capillary rise, h, cannot be observed, the radius of a tube can be determined by the pressure, applied by means of a gas, required to overcome the capillary attraction. The radius r in centimeters is then equal to $\frac{2\gamma}{Q}$ where Q is the required in grams per square centimeter.

The essential part of the required apparatus is shown in Figure 3. It consists of a brass T tube with a flange on one arm for clamping paper specimens securely over the open end of the arm. The specimen is clamped between the flange and a perforated metal disk by means of screws.

For the experimental work the specimen is soaked in water or in a non-swelling hydrocarbon, depending upon whether it is desired to obtain the diameter of the pore in a swollen or non-

[8] Bjerrum and Manegold: Kolloid Z. 43: 5 (1927). Marshall: J. Soc. Chem. Ind. 48: 373 T (1929).
[9] Jour. Agric. Research 38, (1), 23-67 (1929).

swollen condition of the paper. It is then clamped to the flange and set in the same liquid with which it has been soaked just far enough for the liquid to barely touch the bottom of the specimen. Air pressure is applied slowly to permit accurate observation of the pressure at which bubbles appear beneath the plate. From this pressure the radius of the pore with the least capillary resistance is obtained.

A comparison of this radius with the average value given by the calculations under the determination of the air flow resistance will indicate the distribution of the sizes of pores.

THE RECESS VOLUME

The recess volume is determined as the difference between the air volume obtained by the gas-expansion method and the pore volume.

Calculation of the Volumetric Composition of a Paper

As a typical determination of the volumetric composition of paper let us take a sheet that, by a quantitative analysis, has been shown to contain 15 per cent loading, 2 per cent rosin, and 83 per cent fiber, by weight, on the oven-dry basis. Ten disks, each having an area of 10 square centimeters, are then cut from the paper and their total weight in grams and thickness in millimeters are determined. If the total thickness of the 10 sheets is 1.02 millimeters and the weight is 0.702 gram, the weight of 1 cubic centimeter of the sheet is found to be 0.688 gram. Of this weight,

The loading is 15 per cent	= 0.1032 gram
The rosin is 2 per cent	= 0.0138 gram
The fiber is 83 per cent	= 0.5719 gram
	0.6880 gram

The exact volumes occupied by these constituents are calculated from their respective specific gravities, which follow:

Loading (china clay)	= 2.5
Rosin (sizing)	= 1.07
Cellulose (fiber substance)	= 1.5

Then 0.1032 gram of loading occupies 0.041 cubic centimeter, 0.0138 gram of rosin occupies 0.013 cubic centimeter, and 0.5710 gram of fiber substance occupies 0.381 cubic centimeter, making a total volume of solids of 0.435 cubic centimeter. By difference, the total air fraction is found to be 0.565 cubic centimeter.

A measured volume of the paper is placed in the gas-expansion apparatus and the air fraction determined. No voids being present, the result is 56.5 per cent, the same quantity obtained by difference from the solid fraction. (If the gas-expansion method should indicate a smaller volume of air, the difference is the void volume.)

To separate the volumes of recesses and pores, use is made of the air-flow apparatus and the electrical-conductivity cell for determining the pore volume. Since the conductivity method has not been applied to paper up to the present time, the minimum effective diameters of the largest pores in a non-swelling liquid have been assumed in this instance to equal the average diameter of the pores. Based upon this assumption, the pore volume is found to be 1.6 per cent of the total air fraction, leaving 98.4 per cent (by difference) as recess volume.

On the basis of the total volume of paper, the percentage composition of Table 1 can then be calculated.

TABLE 1
VOLUMETRIC COMPOSITION OF A TYPICAL PAPER

Solids: 43.5 per cent			Air: 56.5 per cent		
Loading Per cent	Rosin Per cent	Fiber Per cent	Pores Per cent	Recesses Per cent	Voids Per cent
9.4	3.0	87.6	1.6	98.4	0.0

Value of Volumetric Composition Determination

In Table 2 is shown the relationship between the pore volume and the total air volume of a sheet of dry paper as affected by a single processing variable, namely, wet pressure, such as that which obtains in the presses of a paper machine.

TABLE 2
TWO VOLUMETRIC EFFECTS OF PRESSURE ON A WET SHEET

Wet press pressure Lbs. per sq. in	Total air fraction Per cent of paper	Pore fraction Per cent of paper
2	74.7	48.8
50	60.8	2.6
100	57.3	0.9
500	50.4	0.3
1500	50.1	0.1

The values of Table 3, obtained by the gas-expansion method, show the variation in the combined pore and recess fractions of several types of papers.

TABLE 3
THE COMBINED PORE AND RECESS FRACTIONS OF TYPICAL PAPERS

Type of paper	Pore and recess fraction Percent by volume
Glassine	13.0
Bond	34.2
Greaseproof	43.2
News	53.1
Groundwood sheet	63.1

Conclusion

From the characterizing results obtained in the determination of the volumetric composition of a paper, particularly the detailed composition of the air fraction and its relation to the solids, it may be stated that the methods outlined serve as tentative procedures for extending knowledge toward the evaluation of papers in terms of their use requirements.

Relationship of Impurities to Paper Permanence

By W. E. Byron Baker[1]

Very recently I have been asked to outline a few ideas on the subject of the relationship of impurities to the permanence of paper. The subject calls for a few definitive statements. The term "impurities" is so very broad that it might embrace a sufficient number of substances to demand an indefinite amount of time for discussion, particularly if we adhere to the classical definition of a sheet of paper as an aqueous deposit of vegetable or cellulosic fibers in the form of a continuous web. Under this definition all dissolved substances in the water, and adsorbed therefrom as well as all added substances, regardless of the justification for their addition, must be considered as impurities. It is also necessary to define permanence as the resistance to change of chemical and physical properties of the fibers as well as of the sheet itself.

Let us consider first the impurities within the fibers themselves. These may be considered to exist in the fiber walls in a type of solid solution. In the lignified celluloses these consist of what may be called intra-fibral lignin, in contradistinction to interfibral lignin, which exists between the fibers. The chemical methods of preparing these celluloses for paper manufacture aims to remove this interfibral lignin with least injury to the cellulose by the high temperatures employed, hence the "intra-fibral lignin" is left untouched for the later stages of bleaching, which is done at relatively low temperature. The removal of these residues of intra-fibral impurities takes place with resulting creation of a void space or at least leaving a less dense micellic structure in the fiber wall. Some of the secondary and tertiary forces or bonds are weakened or destroyed, and additional surface per unit volume or weight is exposed, rendering the fiber as a unit more exposed to the action of the external influences tending to change chemical and physical properties. Thus we sense the influence which the quantities of and methods of removal of native impurities must exert upon the ultimate permanency of the fibers in the sheet of paper.

* Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, N. Y., February 19, 1930.

[1] Member TAPPI; Chemist, Stein Hall Company, New York, N. Y.

The concept of "micellic condensation density" doubtlessly can be shown to play an important role in the permanency of fibers. Constitution alone fails to explain relative resistivity of the various polysaccharide substances. Relative physical depolymerization has been shown to be related to strength properties and reactivity (a measure of permanence in the reverse sense) not only in cellulose but also in the other closely related carbohydrates, the starches, as well as in the case of other carbon compounds exhibiting notable and varying powers of association of simpler molecules and micellae.

Degradation of Cellulose

We may consider the degradation of cellulose as the weakening of the fiber structure due to the formation of simpler micellic structure, a sort of crystallization. We can perhaps better explain the causes of this if we study the analogous reactions as they take place in starches, the closest related simpler carbohydrates, since the micellic units are of essentially the same constitution. The degradation reactions coming into play in starches are mainly of two types viz. acidic and oxidizing. Acidic reactions are daily applied in dextrine manufacture, where the extent of the degradation is controlled by concentration and temperature regulation. Under analogous procedures cellulose dextrines are produced. The amount of micellic degradation or physical depolymerization (which usually is accompanied by some chemical decomposition of the nature of hydrolysis in each case) is ordinarily measured by viscosity methods. Of course, in the case of starches, this is simpler than in case of cellulose, where special methods of solution must be employed.

There are other interesting methods by which physical depolymerization can be measured. Recently my attention was directed to the researches of such investigators as Irvine and Karrer on the methylstarches, and also to the work of one of our fellow members —Dr. Heuser, on the methyl celluloses. (Zeitschift für Electrochemie, Vol. 35, No. 9) This work suggests some interesting methods of measuring the degree of depolymerization which are surely worthy of consideration in parallel with the use of the viscosity methods.

In connection with the study of these methods, which is recommended to the Committee on Fine Papers and other interested parties, it is also suggested that consideration be given to the views of Hess and Weltzien expressed later in the same journal (Zeitschrift fuer Electrochemie und angewandte physikalische chemie, vol. 35, number 11), and to Heuser's further response in Vol. 36, same publication. Hess and Weltzien claim Heuser's methods produced mixtures of degradation products, which were claimed to account for his observations, based upon their study of his previous work on methylation, while Heuser counters in a clarifying defense of his work.

Acidity of Inks and Papers

The above suggestions are made as a method of attack for the more thorough study of the nature of the action of acidity in the sheet of paper, as this will most likely be found to be the principal cause of deterioration particularly where accompanied by oxidizing agents or iron or manganese, which can serve as contact agents or accellerators. Acidity of inks or papers, and the presence of iron in the inks, has doubtlessly been at the base of the destruction of some of the manuscripts which have shown embrittlement along the ink lines.

Discussing deterioration of old manuscripts along ink lines, Haerting ("Eisenoxydzellulose"—Kolloidzeitschrift, Bd. 25, 74-79) ascribes the deterioration to tendencies toward crystallization due to formation of definite compounds of iron with cellulose. He outlines his methods of testing the influence of iron in inks, and his methods of artificial ageing. He noted very little effect of dry gases, but decided effects of moisture, which seems to indicate that acidity in paper or inks he used must have played an important part in connection with the iron in respect to the deterioration, the moisture figuring in the acidic action, perhaps by dissociation or hydrolytic effects. Bolton and Doree (Society of Dyers and Colorists, 1924, Vol. 40, p. 292) also express essentially this view, as based upon their experimental work, as they failed to show any marked deterioration in the treatment of fibers with iron compounds in the absence of acidity.

Oxidizing Influences

Let us now turn our attention to the effect of oxidizing influences. Polymerized carbohydrates in general undergo depolymerization, accompanied by chemical change of some of the nuclei, by the influence of oxidizing action. Most of these actions can take place rapidly even at relatively low temperatures. In bleaching our pulps we aim to avoid oxidation of the cellulose, and every precaution is taken to remove the last bleach residues. Equal care is justified in avoiding the presence of any oxidizing matter in the sheet of paper, for in the presence of moisture and any other contact agents which may act as transfer mediums, rapid deterioration can arise.

When the foregoing types of reactions are present, their effects are perhaps best measured by copper number methods, coupled with alkali solubility methods.

Mention has been made of the effects of the presence of iron and manganese. These metals function in ways not clearly understood where oxygen reaction are concerned. Their presence in the dry state has been shown, for example, to cause rapid decomposition of hypochlorites. Iron seems to have an oscillatory character in respect to oxygen in presence of organic matter, i. e., it can carry oxygen in ferric form, suffer reduction, and take up further oxygen. Papers tinted or colored with iron pigments have been found in many cases to suffer lack of permanency.

Effect of Iron and Sulphur Dioxide

While on the subject of iron, data obtained by the chairman of this committee, Dr. Minor, are of considerable interest. These figures show the effect of small amounts of iron, as well as small amounts of sulphur dioxide, individually. The detrimental effects on permanency are relatively small singly, but in combination a great drop in viscosity, accompanied by a large increase in copper number and an increase in acidity was observed. The effect of small amounts of sulphite residues in unbleached sulphite papers in presence of iron appears worthy of consideration. Of course, this is out of the scope of the work of the fine papers committee, which is concerned only with bleached stocks, in which sulphite residues cannot exist. However, the sulphur gases present in the atmosphere must not be forgotten in reference to its influence upon permanency of papers containing appreciable amounts of iron. Minimum iron content is apparently justified even if only from this consideration.

Passing on to the brief consideration of the other processes applied to the sheet of paper, such as sizing, tub sizing, coating, etc., it is obvious that in these operations it should be expedient to avoid the introduction of such substances as might function in the manners above indicated upon the fibers.

A few remarks on tub sizing might not be amiss. Glue has been considered as the ideal tub size. In very many cases, however, excessive alum has been used in connection with it, with resulting impairment of permanence of sheet due to excessive acidic reaction. Such papers deteriorate rather rapidly in regular use, as well as in accelerated aging tests.

Tub sizing has also been practiced with starches and gums derived from starches. As the application of starch products in this case may be considered as intended to simulate the deposit of amorphous cellulose, and since these carbohydrates, as pointed out above, are subject to the same types of reactivity as cellulose, it appears obvious that dextrinized starches and oxidized or oxystarches might well be avoided. It is, of course, true that these substances must possess relatively low viscosity in solution for successful application, but these qualities can be obtained by other known methods adapted to simple physical depolymerization of the starch.

Steam in Paper Mills*

By F. E. Winslow[1] and W C. Newman

The cost of steam and power in some paper mills runs around 20 per cent of the total cost of manufacture. The necessity of decreasing these costs increases with the years. Many mills have reached a period of obsolescence. They need new boilers and generating units. Obviously they are interested in installing new equipment which will generate more kilowatts with the steam needed for process work.

High Pressure Boiler

In the last few years the trend of steam pressures has been upward, tending toward greater economy, with lower production costs. Steam pressures in excess of 200 pounds were rare until recently, but they have been gradually raised in industrial plants to 425 pounds with total temperatures up to 700 deg. F. This increase in pressure has resulted in an increase in kilowatts available for mechanical power. Taking into consideration only the steam used by the paper machine itself, for example, a plant now operating at 150 pounds gauge and using this steam in the paper machine itself at 10 pounds gauge, figuring 100 per cent efficiency on the turbine, one kilowatt of electrical engery will be generated by every 24.2 pounds of steam going into the driers.

If new boilers were installed at 300 pounds gauge pressure, there would be obtained a kilowatt for each 18.8 pounds of steam used, and if this pressure were raised to 400 pounds gauge, we would obtain a theoretical figure of 16.42 pounds of steam per kilowatt hour, or roughly 1.5 kw. would be generated at 400 pounds instead of 1 kw. at 150 pounds.

There are numerous plants operating today with relatively low steam pressure in which the entire plant economy could be raised with a comparatively small increase in capital investment. This can be accomplished by the installation of new high pressure boilers and the installation of a straight non-condensing turbine, which would operate as an automatic reducing valve between the high pressure boilers and the present low pressure steam lines.

Assume that we install new boilers to operate at 400 pounds gauge pressure, 150 deg. F. superheat and exhaust from the turbine at 150 pounds gauge into an existing 150 pound line; then theoretically for every 37.8 pounds of steam per hour going through the turbine from 400 pounds gauge pressure, 150 deg. F. superheat and exhausting at 150 pounds gauge, we would obtain one electrical kilowatt. Assuming a plant using 100,000 pounds of steam per hour, this would give a theoretical increase in plant capacity of 2,600 kilowatts.

Note that all the figures that have been used are on the basis of 100 per cent efficiency. The actual steam consumption per kilowatt will be somewhat higher due to the actual efficiency of the prime mover and generator. This will vary on different installations between 55 and 72 per cent, depending entirely on the amount of steam flow and the pressure at which the steam itself is used.

Low Pressure Plants

In some plants it is desirable to increase the plant economy by raising the plant steam pressure and also maintain existing low pressure drives for several years, but at the same time use steam for the driers simultaneously with carrying on existing 150 pound apparatus. This can be accomplished in several ways, depending entirely upon the character of the plant.

One method would be the installation of an extraction, non-condensing turbine, arranged to take steam at 400 pounds gauge pressure, or whatever predetermined pressure may be arrived at, depending upon location and the price of coal. Steam would be extracted into the existing 150 pound line, the balance exhausting into the low pressure line for process work.

This installation is flexible due to the fact that as the existing low pressure apparatus requiring steam at 150 pounds becomes obsolete, it can be replaced by motors, or with apparatus taking steam at higher pressure, with no resultant loss in economy.

An installation of this type does not always lend itself to the majority of installations, due to the inflexibility of many plants, that is, where the steam load does not exactly follow electrical conditions.

This would then mean a machine which would operate on an initial pressure of 400 pounds, extract steam at 150 pounds, also extract steam simultaneously at 10 pounds for the driers, and make up the balance of the kilowatts by taking the remainder of the steam through a condenser.

If the paper mill is located in the territory served by a power company, an installation of this type may not be desirable due to the fact that usually power can be purchased from the power company at a rate which would be less than the paper company could generate the condensing kilowatts. If the power company supplies the power which would be made on a condensing basis, the size of the turbine may be decreased, and the condenser and water handling eliminated.

This can be accomplished by operating a non-condensing turbine in parallel with the power company. In this case a turbine arranged to operate on 400 pounds and exhausting at 10 pounds or one arranged to operate on 400 pounds, extract at 150 pounds and exhaust at 10 pounds, can be paralleled with the power company. This machine is equipped with a special governor which will automatically vary the load on the machines in accordance with the steam demand and any power required in excess of that which can actually be made by the steam demand will be supplied by the power company.

Referring back to the plant using 100,000 pounds of steam per hour at 150 pounds pressure and raising the pressure to 400 pounds, with 150 deg. F. superheat. From 400 pounds, 150 deg. F. to 150 pounds we obtain theoretically 2,600 kw. from the non-condensing turbine, or figuring an efficiency of 70 per cent we actually obtain 1,820 kw.

The original plant using 100,000 pounds of steam per hour at 150 pounds pressure and exhausting at 10 pounds generates 2,740 kw.

By the installation of the new high pressure boilers, 400 pounds with 150 deg. F. superheat, the total kilowatt output for the 100,000 pounds will be 4.560.

Costs

What will be the cost of the heat to accomplish this result? Referring to the steam tables, we find that the total heat in steam at 400 pounds gauge, 150 deg. F. is 1303.2 B.t.u., and that the total heat in steam at 150 pounds gauge dry steam or the pressure and the temperature of the original installation is 1,195 B.t.u. If we charge all the heat in the steam between these two pressures to the kilowatts generated, the difference is only 108.2 B.t.u., or in order to generate the 1,820 kw., the charge against the cost of generation is only approximately 10 per cent of the steam cost.

The figures used here are more or less empirical, but can be actually worked out in practice. No attempt has been made to reduce the figures given here to the cost per kilowatt, due to the fact that coal charges, insurance, and the methods used to reduce capital investment vary in different plants.

* Presented at the annual meeting of TAPPI, Pennsylvania Hotel, New York. N. Y.. Feb. 19. 1930.

[1] Assoc. member TAPPI; Sales engineer General Electric Co., Philadelphia, Pa.

United States Patents On Paper Making

Second Quarter, 1930

Compiled by Clarence J. West, Chairman, Committee on Abstracts and Bibliography, TAPPI.

NOTE.—Copies of any of the following patents may be obtained from the U. S. Patent Office, at ten cents each in currency.

April 1, 1930

1,752,292. Paper bag. Adelmer M. Bates and John Evans Cornell, assignors to Bates Valve Bag Corporation, Chicago, Ill. Filed Jan. 13, 1926. 14 claims. (Cl. 229-53).

1,752,311. Dandy roll. Walter Knowles Trotman, Holyoke, Mass. Filed Mar. 30, 1929. 2 claims. (Cl. 92-48).

1,752,480. Mechanism for working pulpous material. Joseph William Fay, assignor to Western Electric Company, New York, N. Y. Filed July 6, 1925. Renewed Jan. 17, 1929. 9 claims. (Cl. 92-41).

1,752,561. Process of producing insulating sheets. Rudolf Karg and Josef Weiss, Lucerne, Switzerland. Filed Sept. 27, 1927. 2 claims. (Cl. 92-21).

1,752,608. Envelope machine. Albert Olgay, assignor to Gaw-O'Hara Envelope Company, Chicago, Ill. Filed Mar. 3, 1926. 73 claims. (Cl. 93-61).

1,752,665. Process for the manufacture of sensitized velvet paper for photographical uses. Daniel Friedländer, assignor to Messrs. A. Meursing and E. J. Gratama, Amsterdam, Netherlands. Filed July 7, 1927. 1 claim. (Cl. 91-69).

1,752,802. Paper and paper making. Ernest Lionne, Swampscott, Mass. Filed Nov. 12, 1928. 19 claims. (Cl. 92-21). Paper stock and precipitated celluloid are mixed.

1,752,886. Apparatus for handling paper pulp. Fred B. Chappell, assignor of one-half to Glens Falls Machine Works, Glens Falls, N. Y. Filed Aug. 6, 1926. 1 claim. (Cl. 92-42). Apparatus for dewatering paper pulp.

1,752,972. Impregnating paper for insulation of electric cables and apparatus therefor. Charles James Beaver, assignor to W. T. Glover and Company, Limited, Manchester, England. Filed Mar. 16, 1929. 1 claim. (Cl. 91-46).

April 8, 1930

1,753,204. Stencil sheet. Shinjiro Horii, Tokyo, Japan. Filed Aug. 4, 1927. 2 claims. (Cl. 41-38.6).

1,753,205. Stencil sheet. Shinjiro Horii, Tokyo, Japan. Filed Dec. 31, 1927. 3 claims. (Cl. 41-38.6).

1,753,228. Method of and apparatus for bleaching paper pulp. Robert B. Wolf, New York, N. Y., and Raymond P. Hill, Glen Rock, N. J. Filed Oct. 23, 1928. 19 claims. (Cl. 8-2).

1,753,281. Bag manufacture. Edwin O. Barstow and Arthur C. White, assignors to The Dow Chemical Company, Midland, Mich. Filed Nov. 9, 1925. 2 claims. (Cl. 229-55).

1,753,354. Paper-bag-making machine. Burnham C. Stickney, Hillside, N. J. Filed Nov. 26, 1927. 16 claims. (Cl. 93-18).

1,753,565. Process for coating paper-pulp vessels for the protection therefor against the action of moisture, fat, soap and the like. Fritz Frank, Berlin, Germany. Filed Oct. 26, 1925. 4 claims. (Cl. 91-68). Use for barium salts.

1,753,646. Box-wrapping device. Raymond C. Cunningham, assignor to Hincher Paper Box Co., Seattle, Wash. Filed Sept. 12, 1927. 1 claim. (Cl. 93-54).

1,753,690. Process of making waterproof paper. George Arthur Brown, assignor to Bennett, Incorporated, Salem, Mass. Filed Oct. 23, 1926. 8 claims. (Cl. 92-21).

1,753,775. Method of sizing paper pulp. Judson A. De Cew, assignor to Process Engineers, Inc., New York, N. Y. Filed May 24, 1929. 11 claims. (Cl. 92-21).

1,753,800. Vat for paper-making machines. William H. Millspaugh, assignor to The Paper and Textile Machinery Company, Sandusky, Ohio. Filed Mar. 30, 1928. 22 claims. (Cl. 92-38).

1,753,867. Article discharging and conveying apparatus for paper-cylinder-forming machines. Wilson R. Myers, assignor to Ice Cream Smack Products Co., New York, N. Y. Filed Dec. 31, 1927. 6 claims. (Cl. 93-36).

1,753,948. Method of and mechanism for working fibrous materials. John Nilsen Selvig, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Jan. 9, 1929. 14 claims. (Cl. 92-41).

1,754,024. Fibrous-sheet production. Charles L. Keller, assignor to the Richardson Company, Lockland, Ohio. Filed Mar. 17, 1924. 13 claims. (Cl. 91-70). Use of asphalt.

1,754,207. Treatment of residual liquors. Lynn Bradley and Edward P. McKeefe, assignors to Bradley-McKeefe Corporation, New York, N. Y. Filed Mar. 2, 1921. Renewed June 26, 1928. 16 claims. (Cl. 23-49).

1,754,208. Production of cooking liquor which contains sodium hydroxide. Linne Bradley and Edward P. McKeefe, assignors to Bradley-McKeefe Corporation, New York, N. Y. Filed Oct. 20, 1926. 41 claims. (Cl. 23-49).

April 15, 1930

1,754,343. Process of making friction facings. Edwin E. Waite, assignor to Multibestos Company, Walpole, Mass. Filed Jan. 16, 1929. 14 claims. (Cl. 92-21).

1,754,370. Apparatus for producing fiber board. Harry C. Raynes, assignor to Bemis Industries, Incorporated, Boston, Mass. Filed Oct. 29, 1927. 13 claims. (Cl. 92-39).

1,754,413. Fibrous wall board. Harry E. Brookby, assignor to United States Gypsum Company, Chicago, Ill. Filed Feb. 5, 1927. 7 claims. (Cl. 92-3).

1,754,429. Plaster-wall-board construction. Oliver M. Knode, assignor to United States Gypsum Company, Chicago, Ill. Filed Sept. 25, 1922. 1 claim. (Cl. 154-2).

1,754,519. Beating apparatus. Charles H. Kircoaf, assignor to The Lang Company, Gloucester, N. J. Filed May 17, 1924. 7 claims. (Cl. 92-24).

1,754,522. Straw wilter. Charles R. Osgood, Monroe, Mich. Filed Jan. 16, 1929. 8 claims. (Cl. 92-7).

1,754,586. Magazine grinder for wood pulp. Ambrose H. White, Bronxville, N. Y. Filed Jan. 12, 1928. 7 claims. (Cl. 83-75).

1,754,644. Paper bottle. Arlington Moore, New York, N. Y. Filed May 29, 1926. 8 claims. (Cl. 229-7).

1,754,771. Process of making curved roofing elements and product thereof. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Oct. 1, 1923. Renewed Dec. 24, 1927. 24 claims. (Cl. 92-67).

1,754,784. Composite fiber board. Morris Borsodi, Brooklyn, N. Y. Filed July 16, 1927. 1 claim. (Cl. 154-2).

1,754,822. Suction table roll. Hiland R. Farnsworth, assignor to The Paper and Textile Machinery Company, Sandusky, Ohio. Filed May 26, 1928. 9 claims. (Cl. 92-53).

1,754,827. Waterproofing composition. Albert W. Holmberg, assignor to American Rubber Company, Boston, Mass. Filed May 4, 1925. 4 claims. (Cl. 134-17).

1,754,843. Fireproof wall board and process of producing the same. Fernando Somoza Vivas, assignor to International Fireproof Products Corporation, New York, N. Y. Filed Oct. 8, 1927. 5 claims. (Cl. 92-21).

1,754,902. Continuous sulphate process. William D. Mount, Lynchburg, Va., assignor of one-half to Kenrick A. Forrest, Harvey, Ill. Filed Jan. 11, 1929. 7 claims. (Cl. 92-9).

1,754,909. Process of rapidly bleaching vegetable fibers of any kind. Carl Gustav Schwalbe and Herman Wenzl, assignors to I. G. Farbenindustrie Aktiengesellschaft, Frankfort, Germany. Filed Jan. 19, 1925. 5 claims. (Cl. 8-2).

1,755,006. Loop drier. Alpheus O. Hurxthal, assignor to Proctor and Schwartz, Incorporated, Philadelphia, Pa. Filed July 3, 1928. 11 claims. (Cl. 271-2.2).

1,755,049. Process for coating and surfacing prepared roofing. Walter H. Cady, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed May 19, 1926. 2 claims. (Cl. 91-68).

1,755,162. Method of and apparatus for screening pulp. Anton J. Haug, Nashua, N. H. Filed Dec. 20, 1928. 10 claims. (Cl. 92-20).

April 22, 1930

1,755,781. Insulating lumber or wall board. James J. Hinde, Sandusky, Ohio. Filed July 22, 1926. 2 claims. (Cl. 154-45.9).

1,755,818. Paper product. Paul B. Ganzinotti, Union City, N. J. Filed Feb. 13, 1929. 2 claims. (Cl. 41-24). Decorative uses.

1,755,202. Apparatus for regulating lateral movement of longitudinal sieves. Walter Brecht and Erich Schaun, Augsburg, Germany. Filed May 15, 1929. 8 claims. (Cl. 92-44).

April 29, 1930

1,756,035. Process for the production of combinations of rubber and paper and product obtained thereby. Reed P. Rose and Harold E. Cude, assignors to General Rubber Company, New York, N. Y. Filed Oct. 9, 1925. 7 claims. (Cl. 92-21).

1,756,157. Deckling and scoring machine. Oscar A. Jouret, assignor to The Lester and Wasley Company, Inc., Norwich, Conn. Filed Oct. 22, 1928. 6 claims. (Cl. 92-68).

1,756,194. Process and machine for thickening pulp. Anton Joseph Haug, Nashua, N. H. Filed Sept. 4, 1926. 15 claims. (Cl. 92-35).

1,756,243. Method of making multiple wall containers. William E. Benson, Wollaston, Mass., assignor of one-half to Theodore M. Prudden, Hingham, Mass. Filed Sept. 15, 1927. 3 claims. (Cl. 93-36).

1,756,359. Means for the manufacture of paper boxes, cardboard boxes, and the like. Emil Jagenbrg, Dusseldorf, Germany. Filed Sept. 2, 1926. 14 claims. (Cl. 93-56).

1,756,432. Continuous sulphate process. William Cauldwell, assignor to William D. Mount, Lynchburg, Va. Filed Apr. 13, 1927. 9 claims. (Cl. 92-9).

1,756,478. Method of and machine for making cups. Charles S. Batdorf, Brooklyn, N. Y. Filed Sept. 9, 1925. 67 claims. (Cl. 93-60).

1,756,630. Drier apparatus for paper making machines. Russell Carpenter, Three Rivers, Quebec, Canada. Filed Nov. 3, 1927. 4 claims. (Cl. 34-48).

1,756,722. Pulp product and process of making the same. Robert B. Arnold and Ralph M. Hixon, assignors to Tobacco By-Products and Chemical Corporation, Louisville, Ky. Filed Nov. 12, 1927. 1 claim. (Cl. 92-20).

1,756,754. Method of manufacturing thick webs of wood pulp, cellulose and similar materials. Harald Jensen, Oslo, Norway. Filed Dec. 18, 1928. 3 claims. (Cl. 92-39).

1,756,778. Method for making colored crepe paper with insoluble dyes and resulting product. Gardner R. Alden, assignor to Dennison Manufacturing Company, Framingham, Mass. Filed Nov. 12, 1926. 26 claims. (Cl. 92-64).

May 6, 1930

1,757,010. Sheet material and method of making. Albert E. H. Fair, assignor to Arthur D. Little, Inc., Cambridge, Mass. Filed July 1, 1929. 14 claims. (Cl. 92-3).

1,757,031. Wood-pulp-grinding machine. William A. Whitcomb, assignor to Great Northern Paper Company, Millinocket, Me. Filed Jan. 15, 1926. 10 claims. (Cl. 83-75).

1,757,204. Method of and mechanism for watermarking and cutting paper. Vaughan N. Magill, St. Albans, N. Y. Filed Dec. 11, 1928. 7 claims. (Cl. 92-48).

1,757,205. Method of drying articles. Albert W. Morris, assignor to George E. Coblens, New York, N. Y. Filed Mar. 27, 1928. 4 claims. (Cl. 34-24).

1,757,291. Paper-making machine. Charles B. Briede and Herman L. Kutter, Hamilton, Ohio. Filed Aug. 12, 1926. 25 claims. (Cl. 92-44). Couch roll.

1,757,533. Seal for preventing the flow of material between relatively moving surfaces. Warren B. Lewis, Seekink, Mass. Filed July 12, 1928. 8 claims. (Cl. 92-36).

1,757,620. Method of and apparatus for producing transparent waxed paper. John Deckner and Arthur B. Green and Vasco E. Nunez, assignors to Nashua Gummed and Coated Paper Company, Nashua, N. H. Filed Feb. 9, 1927. Renewed Mar. 10, 1930. 9 claims. (Cl. 91-70).

1,757,755. Colloided cellulose and indurated fiber. Frederick C. Hahn, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Feb. 8, 1928. 13 claims. (Cl. 8-20).

1,757,756. Absorbent paper. George L. Schwartz, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed Nov. 9, 1927. 15 claims. (Cl. 8-20).

1,757,757. Process of producing porous paper. George L. Schwartz, assignor to E. I. du Pont de Nemours and Company, Wilmington, Del. Filed June 6, 1928. 5 claims. (Cl. 8-20).

1,757,768. Purified fiber. Roas Aiken Gortner and Walter Fred Hoffman, assignor to The Northwest Paper Company, Cloquet, Minn. Filed Jan. 30, 1926. 16 claims. (Cl. 92-3).

1,757,867. Control mechanism for paper-making machines. Darcy E. Lewellen, Columbus, Ind. Filed Apr. 7, 1928. 14 claims. (Cl. 92-42).

1,757,876. Manifolding carbon paper. John Hutchinson Reid, Jamestown, N. Dak. Filed Dec. 12, 1928. 1 claim. (Cl. 282-28).

1,757,948. Method and apparatus for making paper. Claude C. Hockley, Portland, Oreg. Filed June 26, 1928. 4 claims. (Cl. 34-48).

May 13, 1930

1,758,053. Laminated sheet material. Kirke L. Moses, Brookline, Mass. Filed Apr. 19, 1924. 2 claims. (Cl. 154-50).

1,758,055. Friction and heat resistant article and method for manufacturing the same. Wil-

liam Nanfeldt, assignor to World Bestos Corporation, New York, N. Y. Filed Nov. 6, 1925. 14 claims. (Cl. 92-21). Asbestos and pulp article.

1,758,059. Multicolor strip shingle and method of making the same. Chester E. Rahr, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed May 3, 1926. Renewed Aug. 24, 1929. 8 claims. (Cl. 91-68).

1,758,167. Paper-making machine. William H. Millspaugh, assignor to The Paper and Textile Machinery Company, Sandusky, Ohio. Filed July 1, 1929. 7 claims. (Cl. 92-38). Vacuum forming cylinder.

1,758,247. Process of utilizing spent lime cooking liquors in the manufacture of paper. Albert L. Clapp, Danvers, Mass. Filed Feb. 14, 1927. 8 claims. (Cl. 92-21).

1,758,502. Process of making fiber-filled woven product. Charles H. Crowell, Fairville, Pa. Filed May 10, 1927. Renewed Oct. 19, 1929. 10 claims. (Cl. 154-40).

1,758,510. Paper box. Ralph A. Gross, assignor to Simplex Paper Box Co., Lititz, Pa. Filed Oct. 8, 1927. 17 claims. (Cl. 229-34).

1,758,511. Collapsible extension top and bottom box. Ralph A. Gross, assignor to Simplex Paper Box Co., Lititz, Pa. Filed May 24, 1928. 3 claims. (Cl. 229-30).

1,758,512. Collapsible paper box. Ralph A. Gross, assignor to Simplex Paper Box Company, Lititz, Pa. Filed Jan. 11, 1929. 9 claims. (Cl. 229-34).

1,758,513. Collapsible paper box. Ralph A. Gross, assignor to Simplex Paper Box Company, Lititz, Pa. Filed Mar. 14, 1929. 18 claims. (Cl. 229-34).

1,758,655. Method of producing cellulosic material. Bela Dorner, assignor to Cornstalk Products Company. Filed Jan. 17, 1927. 11 claims. (Cl. 92-13).

1,758,789. Stencil sheet and method of preparing coating therefor. Paul A. Gollnick and Naomi Gollnick, assignor to Selectograph Company, Chicago, Ill. Filed Sept. 12, 1928. 15 claims. (Cl. 41-38.6).

1,758,896. Manufacture of paper pulp. Alfred M. Tomsen, San Francisco, Calif. Filed Aug. 1, 1927. 3 claims. (Cl. 92-9). Use of alkali sulphide only.

MAY 20, 1930

1,758,917. Fibrous container. Lewis C. Brooks, assignor to National Paper Can Company, Milwaukee, Wis. Filed May 19, 1927. 4 claims. (Cl. 229-7).

1,759,385. Pulping machine. George Stanford Whitham, Jr., Hudson Falls, N. Y. Filed Jan. 24, 1928. Renewed Apr. 4, 1930. 3 claims. (Cl. 92-20).

1,759,600. Method and apparatus for treating coated material. Van Hamm Wilshire, assignor to The Specialty Papers Company, Dayton, Ohio. Filed Feb. 19, 1926. 5 claims. (Cl. 91-68).

1,759,627. Means for slitting and winding paper from paper-making machines. Philip D. Parsons, assignor to Scott Paper Company, Chester, Pa. Filed Aug. 8, 1924. 5 claims. (Cl. 164-65).

1,759,676. Driven slitter for paper-slitting machines. Joseph A. White, assignor to The Moore and White Company, Philadelphia, Pa. Filed July 7, 1928. 4 claims. (Cl. 164-70).

1,759,724. Flushing valve. Joseph A. White, assignor to The Moore and White Company, Philadelphia, Pa. Filed June 16, 1928. 7 claims. (Cl. 92-42).

MAY 27, 1930

1,760,042. Process for bleaching textile fibers by means of ozone. Emilio Crespi, Crespisur-l'Adda, Italy, and Marius Paul Otto, Paris, France. Filed Nov. 30, 1926. 6 claims. (Cl. 8-2).

1,760,045. Apparatus for manufacturing carbon paper. Harold W. A. Dixon, assignor to Columbia Ribbon and Carbon Manufacturing Company, Inc., Glen Cove, N. Y. Filed Apr. 23, 1926. 3 claims. (Cl. 91-50).

1,760,446. Process of making building blocks. Max Skolnik, assignor to Insolo Holding Company, Minneapolis, Minn. Filed Nov. 19, 1928. 6 claims. (Cl. 92-6).

1,760,510. Spraying apparatus for rag catchers. Harvey E. Marvel, assignor to S. F. Bowser and Company, Inc., Fort Wayne, Ind. Filed June 3, 1927. 9 claims. (Cl. 141-12).

1,760,511. Rag-catching apparatus for beater tubs. Harvey E. Marvey, assignor to S. F. Bowser and Company, Inc., Fort Wayne, Ind. Filed June 27, 1927. 9 claims. (l. 214-113).

JUNE 3, 1930

1,760,893. Apparatus for applying binders and the like to paper hood caps and other articles. Wilbur L. Wright and Lee D. Pierce, assignor to Oswego Falls Corporation, Fulton, N. Y. Filed May 4, 1927. 10 claims. (Cl. 91-44).

1,760,923. Paper drier. John Warren Vedder, assignor to Rice, Barton and Fales, Incorporated, Worcester, Mass. Filed July 25, 1928. 5 claims. (Cl. 34-48). Web drier.

1,761,051. Deckling machine. Wilfrid J. Rivard, Feeding Hills, Mass. Filed Jan. 30, 1929. 9 claims. (Cl. 92-68).

1,761,069. Process of manufacture of pulp and paper. Levis Miller Booth, Plainfield, N. J. Filed Oct. 22, 1927. 4 claims. (Cl. 92-21). Use of a coagulating metallic salt and chlorine.

1,761,183. Fourdrinier paper machine. Alonzo Aldrich, Chicago, Ill. Filed July 2, 1923. Renewed Jan. 31, 1927. 39 claims. (Cl. 92-44.)

1,761,184. Fourdrinier paper machine. Alonzo Aldrich, Chicago, Ill. Filed July 2, 1923. 21 claims. (Cl. 92-45).

1,761,185. Shaking mechanism for fourdriner machines. Alonzo Aldrich, Beloit, Wis. Filed July 2, 1923. 40 claims. (Cl. 92-45).

1,761,230. Machine for applying adhesive substance to sheets of material. Alfred Peterson, Denver, Colo. Filed Oct. 2, 1928. 5 claims. (Cl. 91-51).

1,761,543. Apparatus for and process of separating or extracting cellulose or paper pulp. Edmondson Spencer, Calcutta, British India. Filed Feb. 10, 1928. 7 claims. (Cl. 92-7).

1,761,544. Process for separating or extracting cellulose or paper pulp. Edmondson Spencer, Calcutta, British India. Filed Feb. 10, 1928. 8 claims. (Cl. 92-7).

1,761,722. Dry stencil. Harry Gordenstein, Springfield, Mass. Filed Dec. 8, 1928. Renewed Feb. 13, 1930. 3 claims. (Cl. 41-3.5).

JUNE 10, 1930

1,762,157. Paper-creping machine. Samuel J. Campbell, Green Bay, Wis., assignor of one-half to Hudson-Sharp Machine Company, Green Bay, Wis. Filed May 9, 1929. 11 claims. (Cl. 92-69).

1,762,243. Festooning apparatus. Leland S. Rosener, assignor to The Paraffine Companies, Inc., San Francisco, Calif. Filed Mar. 16, 1926. 32 claims. (Cl. 91-55).

1,762,310. Closure for receptacles. Walter L. Rutkowski, assignor to R. C. Can Company, St. Louis, Mo. Filed Mar. 28, 1927. 3 claims. (Cl. 229-43).

1,762,329. Method of and apparatus for saturating sheet material by calenders. William G. Dudleston, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed June 11, 1926. 5 claims. (Cl. 91-68).

1,762,330. Strip-shingle-cutting machine. Herman R. Fiedler and Armandus Grau, assignors to The Patent and Licensing Corporation, Boston, Mass. Filed May 19, 1924. 6 claims. (Cl. 164-68).

1,762,336. Method of and apparatus for saturating sheet material. Lester Kirschbraun, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Sept. 16, 1926. 9 claims. (Cl. 91-70).

1,762,350. Bag machine. Adolph Potdevin, assignor to Potdevin Machine Company, Brooklyn, N. Y. Filed Mar. 3, 1928. 31 claims. (Cl. 93-18).

1,762,452. Envelope machine. Abraham Novick, assignor to F. L. Smithe Machine Co., Inc., New York, N. Y. Filed July 3, 1924. 32 claims. (Cl. 93-62).

1,762,481. Cementitious product and process of obtaining same. Robert A. Marr, assignor to Ramar Syndicate Incorporated, Norfolk, Va. Filed Jan. 12, 1924. Renewed July 31, 1926. 7 claims. (Cl. 92-3).

1,762,702. Method of making boxes and box-blank assemblies. Harry Bridgman Smith, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Jan. 12, 1923. Renewed Sept. 24, 1926. 20 claims. (Cl. 93-36).

1,762,703. Box and method of making same. Harry Bridgman Smith, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Jan. 12, 1923. Renewed Sept. 24, 1926. 6 claims. (Cl. 93-36).

1,762,704. Box blank and box. Harry Bridgman Smith, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Jan. 22, 1927. 18 claims. (Cl. 229-32).

1,762,928. Water-resistant paper. George James Manson, Hawkesbury, Ontario, Canada. Filed Mar. 14, 1927. 11 claims. (Cl. 92-21).

1,762,929. Method of treating paper pulp to obtain paper of improved water resistance. George James Manson, Hawkesbury, Ontario, Canada. Filed Mar. 14, 1927. 20 claims. (Cl. 92-21).

1,762,930. Art of paper making. George J. Manson, Hawkesbury, Ontario, Canada. Filed Oct. 24,1927. 30 claims. (Cl. 92-21). Waterproofing with rosin and an encysted water-proofing agent.

1,762,931. Greaseproof paper or paper which retains its strength in contact with grease. George James Manson, Hawkesbury, Ontario, Canada. Filed Mar. 14, 1927. 8 claims. (Cl. 92-21).

1,763,532. Refining engine. Hermann Mallickh, Duren, Rheinland, Germany. Filed May 28, 1928. 5 claims. Cl. 92-22).

JUNE 17, 1930

1,763,653. Resin-coated pulpboard. Harold C. Harvey and Hubert L. Becher, Trenton, N. J. Filed June 14, 1926. 2 claims. (Cl. 154-459).

1,763,691. Stock regulator. William P. Feeney, Manistee, Mich. Filed Aug. 5, 1929. 6 claims. (Cl. 92-46).

1,763,910. Suction box. Edwin H. Streeter, assignor to Wood Conversion Company, Cloquet, Minn. Filed May 9, 1929. 8 claims. (Cl. 92-39).

1,763,955. Stencil sheet and method of manufacturing the same. Alex Brooking Davis, assignor to A. B. Dick Company, Chicago, Ill. Filed Oct. 26, 1926. 10 claims. (Cl. 41-38.6).

1,764,080. Machine for coating. Robert T. Johnston, assignor to The Patent and Licensing Corporation, Boston, Mass. Filed Mar. 20, 1923. 11 claims. (Cl. 91-44).

1,764,260. Deckle for paper-making machine. James W. Harris, assignor to Paper Machinery Corporation, Dayton, Ohio. Filed Aug. 4, 1925. 3 claims. (Cl. 92-44).

1,764,322. Paper machinery. Herman L Kutter, assignor to The Black-Clawson Company, Hamilton, Ohio. Filed Mar. 20, 1924. 25 claims. (Cl. 242-55).

1,764,358. Machine for making paper box blanks and boxes. Harry Bridgman Smith, assignor to Hoague-Sprague Corporation, Lynn, Mass. Filed Jan. 3, 1924. 171 claims. (Cl. 93-36).

1,764,408. Manufacture of wall paper. Jacob J. Janeway, New Brunswick, N. J. Filed Dec. 18, 1925. 3 claims. (Cl. 91-67.9).

1,764,456. Fiber-board machine. Otto Mantius, New York, N. Y. Filed Mar. 16, 1928. 7 claims. (Cl. 92-39).

1,764,524. Apparatus for making combined paper and fiber cordage. James B. Reber, assignor to Columbian Rope Company, Auburn, N. Y. Filed July 30, 1926. 3 claims. (Cl. 117-15).

1,764,600. Sulphite waste-liquor product and process of making same. Webster E. Byron Baker, York Haven, Pa. Filed Apr. 7, 1923. 4 claims. (Cl. 149-4). Sodium lignosulphonate.

1,764,601. Product and process of making the same from sulphite waste liquor. Webster E. Byron Baker and Fred G. Roberts, assignors to W. E. B. Baker, Brooklyn, N. Y. Filed May 26, 1923. 5 claims. (Cl. 252-7). Lignin gel.

1,764,624. Method of coating material. Earl C. Hall, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Sept. 16, 1926. 19 claims. (Cl. 92-41).

1,764,625. Method of coating material. Earl C. Hall, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed May 4, 1928. 13 claims. (Cl. 92-41).

1,764,676. Creping machine. Samuel J. Campbell, Green Bay, Wis. Filed Dec. 20, 1924. 30 claims. (Cl. 92-69).

1,764,713. Condensate-removal device for high-speed paper driers. Arthur E. Broughton, Minneapolis, Minn. Filed Apr. 23, 1928. 8 claims. (Cl. 34-4).

1,764,777. Means for eliminating wet streaks in paper. Arthur E. Broughton, Minneapolis, Minn. Filed Dec. 31, 1927. 3 claims. (Cl. 34-18).

1,765,104. Folding paper boxes. John Porter Shearer, Newark, N. Y. Filed Jan. 26, 1928. 1 claim. (Cl. 229-37).

1,765,157. Envelope. Walter Helezer, Chicago, Ill. 4 claims. (Cl. 229-82).

1,765,166. Postal envelope. Reginald Lee, Windsor, Victoria, Australia. Filed Apr. 3, 1927. 3 claims. (Cl. 229-82).

JUNE 24, 1930

R17,708. Document paper. Theodore J. Snyder, assignor to Snyder Document Protection Co., Chicago, Ill. Filed Jan. 23, 1930. Original No. 1,727,912, dated Sept. 10, 1929, 2 claims. (Cl. 91-67.95).

1,765,419. Envelope machine. Harold J. Goss., assignor to The International Paper Box Machine Company, Nashua, N. H. Filed June 16, 1928. 9 claims. (Cl. 93-62).

1,765,420. Machine for making set-up boxes. Harold J. Goss, assignor to The International Paper Box Machine Company, Nashua, N. H. Filed Sept. 28, 1928. 8 claims. (Cl. 93-51).

1,765,515. Coated Core and method of and apparatus for applying the coating thereto. Harold Barnard Whitfield, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Mar. 19, 1929. 20 claims. (Cl. 92-41).

1,765,533. Method of and apparatus for coating cores. Helgo Wiggo Jespersen, assignor to Western Electric Company, Incorporated, New York, N. Y. Filed Feb. 16, 1929. 11 claims. (Cl. 92-41).

1,765,560. Process for the recovery of sodium sulphite from spent sulphite liquors. Pierre Alfred Barbou, assignor to Societe Barbou et Cie, Paris, France. Filed Jan. 12, 1927. 2 claims. (Cl. 23-1927).

1,765,564. Paper-bag machine. William A. Buchanan, assignor to The Duplex Paper Bag Company, Cincinnati, Ohio. Filed Aug. 17, 1928. 2 claims. (Cl. 93-33).

1,765,571. Method and apparatus for making lath material. John W. Edson, Herbert S. Stone and David B. Arnold, assignors to Eastern Expanded Metal Company, Cambridge, Mass. Filed Sept. 29, 1928. 33 claims. (Cl. 92-40).

1,765,761. Adhesive and method of its manufacture. Louis K. Fackler, assignor to Stein, Hall and Company, Inc., New York, N. Y. Filed Dec. 29, 1927. 4 claims. (Cl. 87-17).

1,765,774. Insulating paper. Reed P. Rose and

Harold E. Cude, assignor to General Rubber Company, New York, N. Y. Filed July 30, 1927. 34 claims. (Cl. 92-21).

1,765,777. Apparatus for saturating fibrous material. August E. Schutte, assignor to The Flintkote Company, Boston, Mass. Filed Sept. 5, 1925. 6 claims. (Cl. 91-46).

1,765,778. Method of saturating fibrous material. August E. Schutte, assignor to The Flintkote Company, Boston, Mass. Filed Sept. 18, 1925. 10 claims. (Cl. 91-68).

1,765,779. Sheet-winding machine. Ethil Tonnelli, assignor to The Pairpoint Corporation, New Bedford, Mass. Filed Aug. 8, 1928. 17 claims. (Cl. 93-79).

1,765,800. Method of and apparatus for making strip shingles. Frederick C. Overbury, assignor to the Flintkote Company, Boston, Mass. Filed Aug. 16, 1926. 7 claims. (Cl. 91-68).

1,765,834. Machine for making roofing. George P. Hepper, assignor to The Patent and Licencing Corporation, Boston, Mass. Filed Feb. 21, 1924. 1 claim. (Cl. 164-65).

1,765,839. Composition board. Lester Kirschbraun, assignor to The Flintkote Company, Boston, Mass. Filed Jan. 24, 1927. 3 claims. (Cl. 154-45.9).

1,765,860. Liner board or paper. Albert L. Clapp, Danvers, Mass. Filed Dec. 22, 1922. 10 claims. (Cl. 92-41).

1,765,861. Box toe. Albert L. Clapp, assignor to Beckwith Manufacturing Company, Boston, Mass. Filed Sept. 27, 1924. 6 claims. (Cl. 92-21).

1,765,862. Metal-coated paper articles and method of making same. Albert L. Clapp, Danvers, Mass. Filed July 16, 1926; renewed Mar. 18, 1930. 7 claims. (Cl. 204-8).

1,765,928. Process and apparatus for producing paper sleeves and coils with reenforcements wound around. Christian Majer, Tubingen, Germany. Filed July 30, 1928. 2 claims. (Cl. 93-1).

1,766,000. Pulp-stock vat. Howard Parker, assignor to Brown Company, Berlin, N. H. Filed Nov. 22, 1928. 13 claims. (Cl. 92-43).

1,766,034. End closure for fabric rolls. Jens P. Nielsen and Joseph R. Richter, Chicago, Ill. Filed Nov. 30, 1927. 2 claims. (Cl. 206-59).

1,766,082. Method of conserving the heat and pulp from pulp-drying machines. Sigurd Norman, Newberg, Oreg. Filed Jan. 29, 1929. 1 claim. (Cl. 92-38).

1,766,096. Sheet material and method of making the same. Edward L. Benedict, Pittsburgh, Pa. Filed Aug. 15, 1928. 1 claim. (Cl. 92-40).

1,766,105. Support for paper rolls and the like. Arthur W. Cole, assignor to Rex Paper Company, Kalamazoo, Mich. Filed July 30, 1928. 2 claims. (Cl. 242-55.2).

1,766,251. Means for handling wet wall board and the like. Robert M. Greenleaf, assignor to Plastoid Products, Inc., Los Angeles, Calif. Filed Apr. 21, 1927. 2 claims. (Cl. 214-41).

1,766,256. End closing and protecting means for fabric rolls. Jens P. Nielsen, Chicago, Ill. Filed Dec. 29, 1927. 2 claims. (Cl. 206-59).

1,766,257. End closing and protecting means for fabric rolls. Jens P. Nielsen and Joseph R. Richer, Chicago, Ill. Filed Dec. 22, 1927. 2 claims. (Cl. 206-59).

1,766,302. Adhesive paper and the manufacture of same. John Muir, London, England. Filed June 15, 1928. 1 claim. (Cl. 91-68).

1,766,446. Window envelope. Walter T. Von Winkler, Chicago, Ill. Filed Aug. 27, 1928. 2 claims. (Cl. 229-71).

1,766,420. Paper-cup-making machine. Edwin G. Wessman and Henry A. Stone, assignors to Individual Drinking Cup Company Inc., Easton, Pa. Filed Apr. 4, 1923. 171 claims. (Cl. 93-39).

1,766,817. Substitute for hard paper, ebonite, fiber and the like and a process for manufacturing the same. Hans Friedlander and Arthur Janser, Berlin-Charlottenburg, Germany. Filed June 24, 1925. 1 claim. (Cl. 91-70).

1,766,944. Manufacture of pulp. Francis G. Rawling, assignor to The Mead Pulp and Paper Company, Dayton, Ohio. Filed Jan. 21, 1929. 9 claims. (Cl. 92-41).

1,766,982. Plaster-receiving board. Harry A. Cumper, Chicago, Ill. Filed Jan. 30, 1928. 3 claims. (Cl. 72-116).

1,767,088. Press-roll drive. Walter W. Metcalf, Hoosick Falls and Joseph Brown, Middle Falls, N. Y. Filed June 17, 1929. 9 claims. (Cl. 92-49).

1,767,252. Apparatus for the manufacture of ornamental paper. Ernst Mahler and Charles G. Bright, assignors to Paper Patents Company, Neenah, Wis. Filed Apr. 1, 1926; renewed Jan. 23, 1928. 12 claims. (Cl. 92-40).

1,767,532. Method of making continuous waterproof sheets and product thereof. Lester Kirschbraun, assignor to The Flintkote Company, Boston, Mass. Filed May 24, 1923; renewed Dec. 29, 1927. 13 claims. (Cl. 154-2).

1,767,539. Process of making composition boards and the like and apparatus therefor. William H. Mason, assignor to Masonite Corporation, Laurel, Miss. Filed Nov. 20, 1926. 33 claims. (Cl. 92-39).

1,767,543. Process of bleaching cellulose products. Ralph. H. McKee, Earl H. Morse and Philip Edward Rollhaus, assignors to Pilot Laboratory, Inc., Arlington, N. J. Filed Feb. 15, 1928. 7 claims. (Cl. 8-2).

1,767,662. Process of treating cellulose to produce vulcanized fiber and the like. Robert R. Fulton, assignor to The Koppers Company. Filed Mar. 16, 1927. 7 claims. (Cl. 8-20).

1,767,663. Process of treating fabric. Robert R. Fulton, assignor to The Kopper Company. Filed June 7, 1927. 6 claims. (Cl. 91-68).

1,767,787. Variable speed-gear transmission, Daniel R. Francis, assignor to The Waterbury Tool Company, Waterbury, Conn. Filed Oct. 9, 1926. 1 claim. (Cl. 92-38).

1,767,788. Driving gear for paper calenders. Daniel R. Francis, assignor to The Waterbury Tool Company, Waterbury, Conn. Filed June 16, 1927. 1 claim. (Cl. 92-71).

1,767,799. Means for forming paper bags or cardboard boxes. Ernst Hermann Jähne, assignor to the Firm "Universelle" Cigarettenmaschinen-Fabrik J. C. Muller und Co., Dresden, Germany. Filed June 19, 1929. 3 claims. (Cl. 93-51).

1,767,827. Manufacture of paper tubes. Watson H. Woodford, assignor to Remington Arms Company, Inc., Bridgeport, Conn. Filed July 5, 1927. 14 claims. (Cl. 93-81).

1,767,889. Paper-making machine. Harvey H. Jurgensen, Thorold, Ontario, Canada. Filed Nov. 16, 1927. 1 claim. (Cl. 92-38).

1,768,088. Control mechanism for paper-making machines. Darcy E. Lewellen, Columbus, Ind., and Granville R. Zecher, Middletown, Ohio. Filed Apr. 23, 1928. 13 claims. (Cl. 92-46).

1,768,325. Control mechanism for paper-making machines. Darcy E. Lewellen, Columbus, Ind., and Granville R. Zecher, Middletown, Ohio. Filed June 27, 1928. 15 claims. (Cl. 92-46).

1,768,407. Combined slitting and winding machine. Robert McC. Johnstone, assignor to Cameron Machine Company, Brooklyn, N. Y. Filed Aug. 29, 1924. 2 claims. (Cl. 164-65).

Bond Strength Testing

Rothschild, Wis., July 22, 1930

Dear Mr. Macdonald:

In a paper[1] given at the 1930 annual meeting of TAPPI, Messrs. Sutermeister and Porter suggested a method for testing the "splitting strength" of light weight papers. This brought to mind a test developed by the writer about five years ago for determining the "bond strength" in cylinder and other heavy weight papers. At the suggestion of Mr. Sutermeister we are presenting a brief outline of this test with the thought that it may be desirable to have all the factors more thoroughly investigated and standardized if the test is to be generally adopted.

Those who have had experience with cylinder machine sheets know only too well the difficulties often encountered in their manufacture. In test liner peeling of the liner from the filler, railroads, blows and easy scuffing are often marks of poor bonding between the various moulds of stock. In laminated wall boards corner splitting is one very annoying defect which usually shows up only after the various plies have been combined too late to correct the bond in the single ply sheet; and in various other types of board similar weaknesses may be traced back to lack of adequate bonding in the sheet.

The method as developed by us consists of gluing a 2" x 2" sample of the board securely between two blocks of wood, allowing the combination to set for two hours under a weight of six pounds. At the end of that time the bond strength is determined by attaching the upper block to a fixed support and applying a load to the lower block unt.l the break occurs. Then this load is weighed and the bond strength calculated to a basis of pounds per square inch.

In our first experiments we used metal blocks but found that they were not entirely satisfactory for adherence to the board; and that it was inconvenient to clean the adhesive from the blocks. We therefore made use of seasoned white pine blocks, one surface of which had been carefully planed and sanded. A quantity of these was prepared at one time and kept on hand, so that new blocks could be employed for each test.

Believing that a water-soluble adhesive might impart undue moisture to the board and thereby weaken the bond we made a comparison between "N" brand Silicate (Philadelphia Quartz Co.) and a cellulose-derivative cement (duPont Cement No. 5426). The results indicate that silicate gives a higher test after a short "set" but that either adhesive the bond strength increases with lengthened period of setting.

Following are a few results obtained by the foregoing method:

Type of board	Bond strength (pounds per sq. inch)
.016 test liner	19.4
.016 test liner	11.3
.027 kraft board	18.3
Machine dried kraft pulp	4.7

It will be observed that this method detects differences in runs of the same kind of board, which might otherwise not be noted. It is also interesting to note that these results are substantially lower than Sutermeister's for thin paper—part of which is undoubtedly due to the difference in method of testing.

Sincerely yours,

ALLEN ABRAMS

MARATHON PAPER MILLS COMPANY

[1] "New Wrinkles in Paper Testing," by E. Sutermeister and L. W. Porter. Presented at annual meeting of TAPPI, Pennsylvania Hotel, New York, February 18, 1930.

Wood Pulp Prices in Sweden Decline

WASHINGTON, D. C., July 23, 1930.—Domestic prices of wood pulp in Sweden up to the middle of June were marked by a decline in the minimum price of easy bleaching sulphite and strong sulphate pulps and in the maximum price of the latter in comparison with the previous two weeks, according to Consul General John Ball at Osborne.

Section of the

COST DEPARTMENT

of the

American Paper and Pulp Association

Edited by T. J. Burke C. A. Director Cost Dept.

Plotting and Budgeting

Profit, in its real meaning is a service charge, which buyers are willing to pay for development and knowledge and skill in the manufacturing of the merchandise to supply the needs and wants of mankind. Losses will not be considered for they would clearly indicate violations of the economic law.

The function of the Profit Department is—The attainment of adequate and regular profits, through—1st, determining; 2nd, planning, and 3rd, controlling the making of the required excess of the income dollar over the outgo dollar, then standardizing the relationships of the cost factors in the outgo dollar, the results of which must be reflected quantitatively in the financial records of the company.

Our objective, therefore, becomes the making of adequate and regular profits in order to render service. If the making of this excess is left to chance, or accident, it is more than likely that there will be an excess of outgo over income.

Profits "required" by this business will be the element we will plan and control. Business is but two things, income and outgo. Income from the sale of products, is the keynote of our business, for there must be receipts before there can be disbursements.

The outgo dollar, properly considered, automatically gives us the control of costs to the extent that we have standard costs. If we assume that 6 cents of the income dollar is the required profit, which in some way must be retained by the business—and this is the purpose of profit planning and control—then we establish cost controls or standards as to outgo covering the business as a whole.

As our financial records, balance sheets, income statements, and cost reports constitute our business log book, our progress, our results and the attainment of our profit objective are reflected here. Shorn of all excuses, arguments, and reasons for failure, these records contain the cold, hard facts as to performance on the part of all in the employ of the company. These records constitute the measuring stick of our profit-making. If read properly, these records become alive with meaning.

The questions now demanding an answer are: 1st.—What are the profits required by this business? 2nd.—Profits on what unit of measure?

We will take up the second question first—profits on net worth (as invested capital) are informative only. Profit on sales income is not the important thing. Profit on "capital employed" is the true measure of earnings.

Capital employed, or the real investment is the total of the assets, less reserves for depreciation, bad debts, idle funds, etc. The liability side of the books shows the source of this capital employed. For measuring the results of the business in an entirety, then, the best gauge of over-all results is to relate profits to capital employed.

* Excerpt from a series of articles by C. B. Knoeppel, presented by F. L. Brown, Michigan Paper Co., Plainwell, Mich., at Kalamazoo Local Division Meeting of Cost Department of American Paper and Pulp Association, Saturday, May 25.

Profit on sales income is relative; on investment it is absolute; on sales income it can be variable; on capital employed it should be constant. Turnover of sales to capital employed should therefore, govern the profit on sales. For example—10 per cent = necessary profit needed by company.

$$\frac{\$2{,}000{,}000 \text{ Sales}}{1{,}000{,}000 \text{ Cap.}} = 2; \quad \frac{10\%}{2} = 5\% \text{ necessary profit on sales.}$$

$$\frac{500{,}000 \text{ Sales}}{1{,}000{,}000 \text{ Cap.}} = \frac{1}{2}; \quad \frac{10\%}{1/2} = 20\% \text{ necessary profit on sales.}$$

Referring to the first question, what are the profits required? I can take $1,000,000 and invest it in good stocks and bonds and, by diversification and ordinary care in watching the market, make approximately 6 per cent annually on my principal.

To enter into business, we not only must continue to earn 6 per cent on the investment, but, we must do much better. Why? Because risks, uncertainties, energy, time, effort, thought, worry, management of highest order necessary enter into business. The compensation necessary for this return is from one and one-half to three times the going rate in good stocks and bonds. Using 6 per cent normal or 9% to 18% with average of 13½ per cent.

This is necessary in order to pay interest on borrowed capital; to provide for excess of other outgo over other income; income taxes; dividends, common and preferred; safe expansion; extraordinary repairs, additions to surplus and protection against contingencies. The profit ranges, therefore are; Deadline point 6 per cent; Minimum 9 per cent; Mean or Std. 13.5 per cent; Maximum 18 per cent.

I will not go into detail or attempt to give a complete analysis of the procedure of securing the necessary data as to income or outgo, other than to touch the high points a little further along in this discussion, but will try to show you briefly how income and outgo is usually figured and how it should be figured under budget plan.

The formula usually found in business is—Sales — (material + labor + overhead) = profits? if any.

The planning and control of profit by the modern company will reverse this formula:

		Old Method		Modern Method
Income		1.00		1.00
Outgo		...		...
Profit		...		.10
Balance		1.00		.90
Fixed Exp.		...		.14
Balance		1.00		.76
Material	.32		.29	
Labor	.18	.50	.13	.42
Balance		.50		.34
Variable overheads				
Mfg. O. H.	.20		.14	
Adm. O. H.	.10		.04	
Sales O. H.	.25	.55	.09	.27
Loss or profit		— .05		+ .07
Net loss or profit		— .05		+ .17

Importance of Financial Records

The financial records are the starting point and the finishing line in the profit race. The first step is to review the balance sheets for the years 1925-1929 inclusive. The reason for this is, that as you already know, business travels in cycles of from 3 to 5 years. For each of these years you will, after careful analysis of the assets, determine the working capital for each year. The working capital will consist of the assets, less reserves for bad debts, and depreciation, unused plant and Real Estate and excess funds not needed in the business and invested in marketable securities, etc. Be sure and determine the correct figure. This is very important for "Capital Employed" is to be the profit base.

Next comes the compilation of the income sheets in detail for the same years; with these figures and the determined figure of capital employed before you, you can draw up comparisons between years, financial relationships can be determined, various analysis developed, trends and tendencies noted, and a general idea formed of the probable results for 1930.

Before going further, I would like to call your attention to the importance of properly dividing the balance sheets and income statements. An actual case will bring out what I mean:

"The concern in question had capital employed of $1,740,939. Profits for the year in question amounted to $68,345. Profit return on the investment was 3.92 per cent (it was not justifying its existence as a business). Yet, the financial statement was one of the best ever reviewed. Clearly, something was wrong. The balance sheets and income statements were divided so as to picture the two sides of the business—the operating side (manufacturing and selling), and the financial side (marketable securities and secured loans). The $1,740,939 in total assets became $1,286,541 in operating assets, and $454,398 in financial assets. Liabilities were correspondingly divided. The income statement told the real story. The same division showed $34,162 in financial profits, or 7.53 per cent on the financial assets; with only $34,183 in operating profits or 2.66 per cent on the operating assets. Needless to say, it did not require much selling to force a clear-cut division in the books between the operating and financial sides, so that the two kinds of business could be revealed separately."

Requirements for Current Year

It is assumed for this company, the figure for capital employed be $1,800,000.00 with the profit base determined, the next important step is to develop the profit requirements for 1930.

Past sales have shown an average profit return. Therefore, for a tentative volume of sales for 1930, based on the average sales for preceding years, the corresponding profits can be calculated, which may or may not be enough—usually not.

Multiply the capital employed by 13.5 per cent as return, equals the standard profit requirement. This however, may be too much to expect for 1930, due to market conditions, etc. Reviewing the profit return for 1925-1929 and relating them to the corresponding capital employed, will show by how much the prior profits have fallen below or exceeded the 13.5 per cent on the investment.

Finally, the profit requirement should be developed by taking the following into consideration: Interest on borrowed capital; Income taxes—State and Federal; Preferred Dividends; and Common Dividends. Necessary apportionments to come out of profits rather than surplus (depreciation having already been included in costs). What should be added to the surplus account?

EXHIBIT "A"

		Sales Dollar	Cost Dollar
Material cost	$960,000.00	.5333	.6166
Labor cost	276,800.00	.1538	.1778
Direct cost of sales	$1,236,800.00	.6871	.7944
Mfg. expense	228,000.00	.1267	.1465
Adm. expense	52,000.00	.0290	.0334
Selling expense	40,000.00	.0221	.0257
Expense cost of sales	$320,000.00	.1778	.2056
Total cost of sales	$1,556,800.00	.8649	1.0000
Profit	243,200.00	.1351	
Sales income	$1,800,000.00	1.0000	

COST SECTION

EXHIBIT "B"
ESTIMATED COST BUDGET AND SALES DOLLARS

		Sales Dollar	Cost Dollar
Material cost	$960,000.00	.5333	.6166
Labor cost	276,800.00	.1538	.1778
Direct cost of sales	$1,236,800.00	.6871	.7944
Variable mfg. expense	$160,000.00	.0889	.1028
Variable adm. expense	20,000.00	.0112	.0128
Variable selling expenses	28,000.00	.0155	.0180
Total variable	$208,000.00	.1156	.1336
Total variable cost	$1,444,800.00	.8027	.9280
Fixed mfg. expense	$68,000.00	.0378	.0437
Fixed adm. expense	32,000.00	.0178	.0206
Fixed selling expense	12,000.00	.0066	.0077
Total fixed expense	$112,000.00	.0622	.0720
Total cost of sales	$1,556,800.00	.8649	1.0000
Profit	$243,200.00	.1351	
Sales income	$1,800,000.00	1.0000	

A review of this analysis will result in a profit objective for the year 1930, from the standpoint of the economic needs of the business. It is the profit requirement, whether the sales are 50 per cent or 150 per cent of normal capacity. Making the profits required is distinctly another story, but at least the work starts with a target for all to shoot at. If misses are made—and there will be misses at first—plans are such as to show by whom and why they were made, which is the starting point for betterment.

Income from Sales

Another important phase of the work which now demands careful consideration is—What income from sales is necessary in 1930, in order that the profits from the sales of goods may equal the profit objective? A review of past sales will develop an average of yearly sales. What the turnover of sales to capital employed in the industry and business in question should be, will result in another sales requirement.

Based on forecasts of economic services, bank letters, trade papers, and general opinions, another sales figure can be determined. Then, there are the opinions of the sales department personnel, which should be taken into consideration. There is also the matter of market analysis which will develop an intelligent sales objective. Finally, it is known (or should be known) what the plant can produce in the way of sales volume.

From one or more of these seven ways of looking at the sales side, the following should be determined:

1—What is the full limit of sales the business has plant capacity to produce, or 100 per cent manufacturing capacity.

2—What is a fair standard of sales accomplishment, or 100 per cent practical sales capacity.

3—What sales can reasonably or normally be expected, which can be considered as the sales budget for 1930?

With profit and sales requirements tentatively determined, the task now becomes one of budgeting the various elements in the sales dollar.

Net income from sales	$1,800,000	$1.0000
Operating profits needed	243,200	0.1350
Cost of sales	$1,556,800	$ .8650

This calculation determines all the business can afford to spend as cost of sales—which automatically standardizes outgo allowances in total, if the required profits are to be made on the sales.

Major Classifications of Outgo

The major classifications of the outgo are next budgeted tentatively. This is done after a review of past results, and proper consideration of the present, based on studies and predeterminations, together with a series of conferences among pivotal executives who are to develop the outgo budgets.

The comparative manufacturing statements for the years 1925-1929 is taken and the major elements of outgo would be budgeted. See Exhibit A.

As important as it is to know what the tentative budget is, it is equally important to know what the picture will be as to profits if sales fall to 65 per cent of capacity or attain 105 per cent of capacity. Forecasts are based on more or less definite premises, with budgets set accordingly. When conditions change, premises should change, and budgets be adjusted to suit. In other words, budgeting should be variable.

Two Kinds of Costs

There are two kinds of costs—Fixed costs and Variable costs. Fixed costs are of two kinds:

1—Shut-down costs, which are incurred whether the business is operated or not, and are, therefore, without reference to volume, taxes, insurance, depreciation, etc.

2—Nucleus costs, or costs to maintain a minimum organization and provide necessary facilities to carry on a going business—such as part of the costs for foremen, clerks, salesmen, executives, supplies, advertising, etc. All other costs are variable costs.

Intelligent Analysis Necessary

It is therefore necessary to make an intelligent analysis of these three kinds of costs, classified as fixed and variable. See Exhibit B. A large sheet should now be taken, with two-section columns for compilation of facts at 20, 40, 60, 80, 100 and 120 per cent of practical sales capacity. In the left hand column would be posted the various items shown in the statement of figures just shown. In the right hand sections, the totals would be accumulated, to be used for charting purposes.

Blake, Moffitt & Towne Open at Yakima

Negotiations have just been completed by Blake, Moffitt & Towne for the opening of a new Division at Yakima, Wash. Announcement of this location, the seventeenth in the wholesale distributing chain, was made by O. W. Mielke, head of the Blake, Moffitt & Towne interests in the Pacific Northwest.

In charge of the new Division will be John M. Darnell who has been the company's representative in this section for the past eight years. The office and warehouse is centrally located at 107-109 South Second street and work has started at once on necessary alterations.

As in the case of other divisions of the company, a general stock of paper, paper products and twines will be carried on hand in order to give paper buyers in the valley region the best possible service and attention.

The territory to be served from the new division includes central Washington between Easton and the Columbia River and for many miles to the North and South. This territory which is the natural market center of the famous apple growing district has been enjoying a period of rapid development.

According to Mr. Mielke the possibility of opening a Yakima branch has been under consideration by his company for some time. With Yakima there are now three divisions in the State of Washington, Seattle and Tacoma being the other two locations. In Oregon the company has offices in Portland, Salem and Medford while a branch of Portland is maintained at Boise. Divisions include San Francisco, Los Angeles, Fresno, Oakland, Sacramento, San Jose, San Diego and Long Beach. Two divisions, one in Phoenix, and one in Tucson, are operated in Arizona.

Not only is Blake, Moffitt & Towne one of the largest paper concerns in the jobbing trade, but is also one of the oldest pioneer institutions on the Coast. It is now celebrating its 75th anniversary, having been founded in San Francisco in 1855.

Considerable activity in the organization's expansion has already marked the anniversary year—the most recent of which is the opening at Yakima, other events including the opening of new buildings for the Oakland, San Diego and Medford Divisions.

News of the Boston Paper Trade

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., July 21, 1930.—Arthur E. Ham & Sons have become the exclusive Boston agents for Mural Cover, a new line brought out by the Marvellume Company, Holyoke, Mass. This cover is very tough and durable in seven unusual shades and moire finish. It is designed for use in loose-leaf catalog covers, and the lightweight grade may be employed for sectional dividers, fly-leaf requirements, French fold specimens, case-bound books, envelopes and special work.

Three representatives of the Storrs & Bement Company, Roger K. Vaughan, Donald Richardson and Sandys Clyde, attended the salesmen's camp of the S. D. Warren Association at Cumberland Mills, Me., July 10, 11 and 12.

The July catalog and price list of paper, cardboard and envelopes of Rutter & McNaught, Inc., just out, contains ten more pages than the last previous one, issued in February, on account of the addition of new lines. The catalog is printed on Buff Preference Ledger.

Miss Rachel Samuels has recently completed fifty years with the Storrs & Bement Company. The anniversary was observed by a fitting testimonial in the form of a substantial check from the company and by recognition on the part of The McQuillen Associates, an organization of the employees, of which Miss Samuels is a member. Miss Samuels is still active and on the job every day.

The Deerfield Glassine Company, Monroe Bridge, Mass., which has an office in this city, is operating the plant to capacity and using every effort to keep up with the delivery of orders at the desired time.

The I. Lappin Waif Paper Company, Boston, has been incorporated with a capitalization of $100,000; 1,000 shares of $100 each. President, Isaac Lappin; treasurer, Albert Lappin, 10 Alton Court, Brookline, and Flora Lappin.

Blair B. Stringfellow, Jr., New England representative of the Albemarle Paper Manufacturing Company, Richmond, Va., will leave to attend a sales meeting at the mill July 30 and 31.

John H. Brewer, general manager of Storrs & Bement Company, is passing a two weeks vacation at Falmouth, Mass., with his family.

International Control of Raw Materials

The Brookings Institution, Washington, D. C., has just issued "International Control of Raw Materials," by Benjamin B. Wallace and Lynn R. Edminster.

The unequal distribution of raw materials among the nations of the world has given rise to some of the most difficult problems in the field of international relations. In spite of the growing economic interdependence of nations there has been in recent years a marked increase of restrictions upon access to essential materials, especially materials of which the production is highly localized. These restrictions and the constant fear of their further extension have been a source of increasing anxiety and friction and hence a disturbing factor in the maintenance of peaceful international relations.

This volume deals with a particular phase of the problem; namely, government control of exports. It shows, by analysis of typical cases, the objects, methods, and results of control. It describes the policy of the United States in regard both to its own raw materials and to restrictions imposed by other countries. It reveals the inadequacy of any purely national approach as a remedy for the situation, such, for example, as a policy of economic retaliation. It analyzes the international issues raised by the controls and it discusses principles and machinery that might be utilized in adjusting international controversies in this field. The price is $3.50.

COST SECTION

IMPORTS OF PAPER AND PAPER STOCK

NEW YORK, BOSTON, PHILADELPHIA AND OTHER PORTS

NEW YORK IMPORTS

WEEK ENDING JULY 19th, 1930

SUMMARY

Cigarette paper .....860 cs.
Wall paper .....11 bls., 6 cs.
Paper hangings .....3 trusses, 17 bls., 10 cs.
News print .....1742 rolls
Printing paper .....76 rolls, 203 cs.
Wrapping paper .....1 ble., 4 cs.
Filter paper .....17 bls., 79 cs.
Drawing paper .....1 cs.
Decalcomania paper .....12 cs.
Tissue paper .....55 cs.
Baryta coated paper .....24 cs.
Gold coated paper .....5 cs.
Surface coated paper .....73 cs.
Photo paper .....3 cs.
Writing paper .....8 cs.
Painted paper .....6 cs.
Miscellaneous paper .....132 cs.

CIGARETTE PAPER

American Tobacco Co., La Bourdonnais, Bordeaux, 800 cs.
H. H. Strauss, Collamer, Havre, 60 cs.

WALL PAPER

Schmidt & Pritchard, Berlin, Bremen, 1 ble.
C. Grimmer & Son, Berlin, Bremen, 2 bls.
A. C. Dodman, Jr., Inc., Majestic, Southampton, 2 bls.
J. E. Bernard & Co., Majestic, Southampton, 1 cs.
A. L. Diament & Co., Majestic, Southampton, 2 cs.
C. Grimmer & Son, Bremen, Bremen, 1 ble.
F. J. Emmerich, Adriatic, Liverpool, 2 cs., 5 bls.
Thomas & Pierson, Mauretania, Southampton, 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., Minetonka, London, 7 bls., 2 cs.
W. H. S. Lloyd & Co., Samaria, Liverpool, 3 trusses.
A. C. Dodman, Jr., Inc., Samaria, Liverpool, 4 bls.
F. L. Kramer & Co., Majestic, Southampton, 6 cs.
Whiting & Patterson Co., Inc., Majestic, Southampton, 1 cs.
Whiting & Patterson Co., Inc., Mauretania, Southampton, 6 bls., 1 cs.

NEWS PRINT

Perkins, Goodwin & Co., Karlsruhe, Bremen, 74 rolls.
Parsons & Whittemore, Inc., Karlsruhe, Bremen, 949 rolls.
Lunham & Reeve, Lagaholm, Kotka, 352 rolls.
——, Chickasaw, Kotka, 367 rolls.

PRINTING PAPER

E. Dietzgen & Co., Statendam, Rotterdam, 57 cs.
Armour & Co., Pr. Roosevelt, Hamburg, 76 rolls.
Baldwin Paper Co., Berlin, Bremen, 39 cs.
C. Steiner, Bremen, Bremen, 4 cs.
Globe Shipping Co., Majestic, Southampton, 7 cs.
P. C. Zuhlke, Westernland, Antwerp, 52 cs.
Japan Paper Co., Paris, Havre, 16 cs.
Keller, Dorian Paper Co., Paris, Havre, 23 cs.
T. N. Fairbanks, Mauretania, Southampton, 5 cs.

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Gevaert Co. of America, Westernland, Antwerp, 66 cs.

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Globe Shipping Co., Collamer, Havre, 3 cs.
Tiffany & Co., Mauretania, Southampton, 2 cs.
T. N. Fairbanks, Conte Biancamano, Genoa, 2 cs.

PAINTED PAPER

Guaranty Trust Co., Paris, Havre, 6 cs.

MISCELLANEOUS PAPER

Tamm & Co., Statendam, Rotterdam, 28 cs.
H. W. Robinson Co., Paris, Havre, 4 cs.
Standard Products Corp., Paris, Havre, 73 cs.
Coenca, Morrison Co., Paris, Havre, 3 cs.
Saentis, Inc., Paris, Havre, 2 cs.
Japan Paper Co., Paris, Havre, 6 cs.
Guilbout Freres, Paris, Havre, 8 cs.
Guerlin, Inc., Paris, Havre, 7 cs.
F. C. Strype, Conte Biancamano, Genoa, 1 cs.

RAGS, BAGGINGS, ETC.

E. J. Keller Co., Inc., Drottningholm, ——, 44 bls. rags.
American Express Co., Carmania, London, 45 bls. rags.
C. R. Spence & Co., New York City, Bristol, 110 bls. rags.
Baring Bros. & Co., New York City, Bristol, 163 bls. rags.
——, Statendam, Rotterdam, 32 bls. old canvas.
E. Butterworth & Co., Inc., Adriatic, Liverpool, 28 bls. paper stock.
Chase National Bank, Chickasaw, Leningrad, 228 bls. rags.
——, Californie, Dunkirk, 12 bls. rags.
Guaranty Trust Co., Californie, Havre, 189 bls. rags.
V. Galaup, Californie, Havre, 44 bls. rags.
A. Kessler, Californie, Havre, 44 bls. rags.
R. M. Gray, Inc., Gourko, Antwerp, 151 bls. flax waste.
G. W. Millar & Co., Gourko, Antwerp, 95 bls. flax thread waste.
Castle & Overton, Inc., Gourko, Antwerp, 280 bls. flax waste.
W. Steck & Co., Gourko, Antwerp, 130 bls. jute card waste.
Guaranty Trust Co., Gourko, Antwerp, 106 bls. rags.
Irving Trust Co., Gourko, Antwerp, 172 bls. bagging.
Irving Trust Co., Collamer, Dunkirk, 120 bls. paper stock.
S. Birkenstein & Son, Nordvard, Barcelona, 105 bls. rags.
Darmstadt, Scott & Courtney, Nordvard, Barcelona, 278 bls. rags.
——, Nordvard, Genoa, 86 bls. bagging.
E. J. Keller Co., Inc., Innoko, ——, 63 bls. rags.

OLD ROPE

Brown Bros. & Co., United States, Copenhagen, 100 coils.
Brown Bros. & Co., New York City, Bristol, 80 coils.
Brown Bros. & Co., Westernland, Antwerp, 48 coils.
W. Steck & Co., Statendam, Rotterdam, 48 coils.
International Trust Co., Estrella, Barcelona, 39 coils.

CHINA CLAY

English China Clays Sales Corp., Adriatic, Liverpool, 140 bags.

WOOD PULP BOARDS

Lagerloef Trading Co., Lagaholm, Kotka, 54 bls

WOOD FLOUR

The Burnet Co., Drottningholm, Gothenburg, 102 bags.
The Burnet Co., Statendam, Rotterdam, 500 bags.

WOOD PULP

E. M. Sergeant & Co., United States, Oslo, 150 bls. wood pulp, 25 tons.
Atterbury Bros., Inc., United States, Oslo, 1125 bls. wood pulp, 224 tons.
Chemical Bank & Trust Co., United States, Oslo, 175 bls. sulphite, 31 tons.
Parsons & Whittemore, Inc., Drottningholm, Gothenburg, 600 bls. sulphate.
E. M. Sergeant & Co., Drottningholm, Gothenburg, 599 bls. dry soda pulp.
Chase National Bank, Wyndyke, Archangel, 3341 cords wood pulp.
Irving Trust Co., Berlin, Bremen, 330 bls. wood pulp.
Lagerloef Trading Co., Lagaholm, Wiborg, 170 bls. sulphate.
Lagerloef Trading Co., Lagaholm, Wiborg, 160 bls. sulphite.
Lagerloef Trading Co., Lagaholm, Kotka, 1520 bls. sulphite.
Perkins, Goodwin & Co., Lagaholm, Stockholm, 2500 bls. sulphate.
Price & Pierce, Ltd., Schenectady, Wallvik, 600 bls. sulphite, 100 tons.
Stora, Kopperberg Corp., Schenectady, Skutskar, 125 bls. wood pulp.
——, Asta, Chandler, 7975 bls. sulphite, 1740 tons.
——, Chickasaw, Tolkis, 185 bls. sulphite, 37 tons.

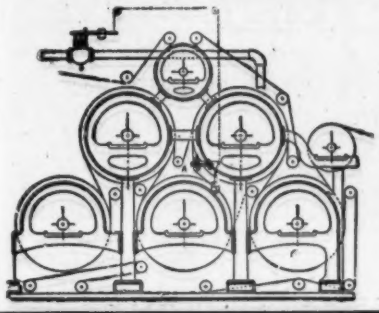
PHILADELPHIA IMPORTS

WEEK ENDING JULY 19th, 1930

Castle & Overton, Inc., New York City, Bristol, 114 bls. rags.
Lagerloef Trading Co., Lagaholm, Wiborg, 11632 bls. sulphite; 647 bls. wood pulp boards.
Bulkley, Dunton & Co., Lagaholm, ——, 500 bls. sulphate.
Philadelphia National Bank, Nordvard, Genoa, 90 bls. rags.
Irving Trust Co., Nordvard, Genoa, 301 bls. fleshings.
S. Birkenstein & Son, Nordvard, Marseilles, 63 coils old rope.

(*Continued on page 62*)

The Pickles Drying Regulator



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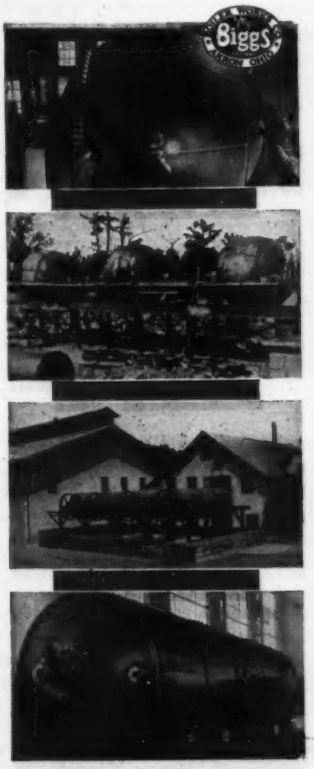

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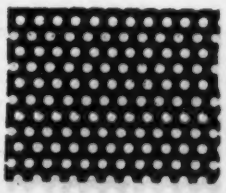

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Imports of Paper and Paper Stock

(*Continued from page 60*)

Philadelphia National Bank, Nordvard, Barcelona, 163 bls. rags.

National Vulcanized Fibre Co., Nordvard, Barcelona, 74 bls. rags.

E. J. Keller Co., Inc., Nordvard, ——, 69 bls. rags.

E. J. Keller Co., Inc., Estrella, ——, 24 bls. rags.

E. J. Keller Co., Inc., Tomalva, ——, 148 bls. rags.

E. J. Keller Co., Inc., Harburg, ——, 68 bls. bagging; 109 bls. rags.

E. J. Keller Co., Inc., London Corporation, ——, 118 coils old rope.

NORFOLK IMPORTS

WEEK ENDING JULY 19th, 1930

Lagerloef Trading Co., Lagaholm, Wiborg, 2312 bls. sulphite.

Virginia Paper Co., Lagaholm, Kotka, 149 rolls news print.

W. M. Stone & Co., Lagaholm, Kotka, 223 rolls news print.

Old Dominion Paper Co., Inc., Lagaholm, Kotka, 101 rolls, 99 bls., 73 pkgs paper.

Lagerloef Trading Co., Lagaholm, Kotka, 570 bls. sulphate.

Bulkley, Dunton & Co., Lagaholm, ——, 1500 bls. sulphate.

BALTIMORE IMPORTS

WEEK ENDING JULY 19th, 1930

——, Chickasaw, Kotka, 620 bls. sulphite.

——, Chickasaw, Tolkis, 2600 bls. sulphite, 527 tons.

Price & Pierce, Ltd., Chickasaw, Stockholm, 1800 bls. sulphite, 227 tons.

National City Bank, Californie, Dunkirk, 293 bls. rags.

J. Horne, Collamer, Havre, 6 cs. writing paper.

American Writing Salesmen To Meet July 31

The American Writing Paper Company sales force will meet at Holyoke on July 31 for a three day convention. Men will come from all branch office points, from as far away as San Francisco. At this meeting will be discussed many new and aggressive plans, as laid out by officials of the Company, for an increasingly wide distribution of Eagle-A Papers during the year 1931.

The first two days of the convention will be entirely devoted to business. On Saturday, all will attend the Annual Golf Tournament and Field Day of the Eagle-A Organization, which has become a regular affair for the employees of the Company, always falling on the Saturday of so-called "shut-down week" in Holyoke, when the water is out of the canals and necessary repairs and clean-ups are being made in the water-power systems all over town.

This is the first year that the out-of-town men have been able to participate in this affair, so that everyone is looking forward to a party which, this year, will be jollier than ever on account of their presence.

On Saturday night the convention will wind up with a dinner party. Anyone who is acquainted with the wonderful esprit de corps pervading the big Eagle-A Family, as led by their President Sidney L. Willson, will readily appreciate what this convention means to those who are privileged in taking part. Mr. Willson is always present at all sessions at these conventions, work or play, and enters intensively into all of them which adds greatly to the interest and enjoyment of the whole occasion for his many associates and admirers throughout the Company.

Those in charge of the business meetings are—Vice-Presidents Madden and Ewing, and Assistant General Sales Manager McDougall.

To Survey Possible Uses of Waste Wood

POTSDAM, N. Y., July 21, 1930.—A survey of New York to determine possible uses of waste wood is to be made by a wood utilization committee appointed by Secretary of Commerce Lamont. The survey will be made under the direction of the national committee which recently demonstrated that approximately 40,000 carloads of wood are going to waste annually in North Carolina. The first move planned is to send out questionnaires to the 2,000 or more wood using industries in the state for the purpose of finding out where the waste lies and the committee will then try to find a market for it.

The New York Development Association has announced plans for aiding in financing the survey which follows those recently made in other states. Governor Roosevelt will serve as chairman of the committee on wood utilization and will be assisted by George W. Sisson, Jr., Potsdam; C. P. Setter, Cattaraugus; Ralph Taylor, Jamestown; Major H. S. Bemison, New York City; and A. C. Goodyear, of Buffalo. The committee will also be aided by the New York State advisory committee.

How New Eastern Rates Will Affect Watertown

WATERTOWN, N. Y., July 21, 1930.—An example of the manner in which the recent Eastern class rates decision will affect the paper industry of this city is given by Wilbur La Roe, Jr., prominent attorney, who characterized the victory as a notable one for the entire Northern New York district. He represented the local Chamber of Commerce and other interests at the many conferences before the Interstate Commerce Commission.

As an illustration Mr. La Roe cited the effect the new rates would have on wrapping paper. The present rate on that commodity from this city to Cleveland, Ohio, is thirty-four cents per one hundred pounds while the same rate applies to Cleveland from Rumford, Maine, a competitive point. Under the new scale the rate from Watertown will be twenty-six cents or lower while the rates from Rumford are increased to forty-one cents. This same principle applies to virtually all rates in and out of Watertown. While the rates in this section show reduction it is noticeable that those from New England competing points to where Northern New York paper manufacturers ship, are increased.

Lumberjacks Busy in Vicinity of Potsdam

POTSDAM, N. Y., July 21, 1930.—A large force of lumberjacks is being steadily employed by the Sisson-White Company in this vicinity in filling contracts for a number of paper mills. About 19,000 cords of pulpwood is being cut north of here and the entire amount will be skidded and drawn to the Raquette River early next November. The lumber operations now under progress insures a big drive on the river next spring and virtually the entire consignment will be shipped to the Unionville mill of the Raquette River Paper Company. The plant here has been using considerable Russian pulpwood recently and the high quality of the product guarantees further importations from that source.

To Work Five Days at Fort Edward

FORT EDWARD, N. Y., July 21, 1930.—A new schedule went into effect at the local branch of the International Paper Company when all employees started working five days a week. For some time past the big plant had been operating only four days because of the congested condition of the stock rooms but orders from the New York office resulted in the increased schedules. Whether or not the new arrangement is permanent could not be ascertained but inasmuch as conditions in the paper industry have been showing improvement it is believed here that in a few weeks the entire mill will again be running on capacity schedules.

Ehrenreich Paper Co. Formed

ATLANTA, Ga., July 21, 1930.—Harry S. and Dena Levin Ehrenreich today filed a petition for incorporation for a period of 20 years under the name of Ehrenreich Paper company, in the superior court through Hester and Lewis, attorneys. The capital stock all paid in is $10,000 with the right to increase to $25,000.

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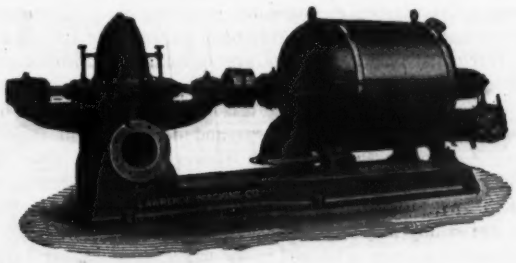

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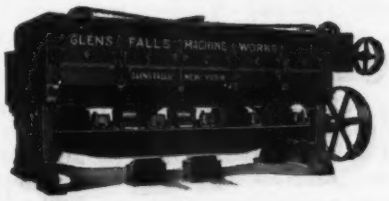

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New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, July 23, 1930.

Trading in the local paper market is gradually becoming more lively and demand for the various standard grades of paper is better than for some time past. With numerous inquiries around, sales forces of the leading paper organizations are generally optimistic regarding the immediate future. Prices are holding to previously quoted levels, in most instances.

There were no radical changes reported in the news print market during the past week. Production is being maintained by the manufacturers in about sufficient volume to take care of current needs and the output is being freely absorbed by the publishers. Stocks at the mills are not excessive. Prices are holding to the schedule which has prevailed for some time past.

The position of the paper board market is practically unchanged. Box board is in moderately active demand for the season. The price situation remains unsatisfactory. Fine papers are in seasonal request and tissues are going forward at a satisfactory pace. The coarse paper market is somewhat irregular but no further price revisions have been reported.

Mechanical Pulp

Steadiness prevails in the ground wood market, although trading is light at present. Offerings of both domestic and mechanical pulp are about sufficient to meet current requirements. Shipments against contract are going forward in normal value for the time of year. Prices remain steady and unchanged and there is little talk of concessions around.

Chemical Pulp

Some improvement was noticed in the chemical pulp market during the past week. There was an encouraging request for both domestic and imported sulphites and sulphates for delivery in the forthcoming year. Kraft pulp is also in excellent demand at the prevailing low prices. Soda pulp operations have been running in close balance with the prevailing demand.

Old Rope and Bagging

The old rope market was only moderately active. Although offerings of both domestic and imported old manila rope are limited, demand is light and prices are weak. Old mixed rope continues fairly active. Most of the business transacted in the bagging market was along routine lines. Gunny and scrap remain fairly steady but roofing bagging is quiet.

Rags

Conditions in the domestic rag market were more satisfactory than of late. The paper mills are displaying more interest in cotton cuttings. Mixed rags are practically unchanged. Roofing rags are dull at present. Prices are generally holding to previously recorded levels. Trading in imported rags is restricted. Prices abroad are still considered too high.

Waste Paper

The paper stock market was more buoyant than of late. Board manufacturers are beginning to exhibit greater interest in the lower grades and stocks at the mills are apparently low. The price situation should improve in the near future. Old kraft machine compressed bales are steady. Hard white envelope cuttings continue firm. Soft white shavings are moving in good volume.

Twine

Most of the business transacted in the local twine market during the past week was along routine lines. The industry is generally considered to be in a normal position for the time of year. While new business is somewhat scarce, contract supplies are moving into consumption at a satisfactory pace. Prices are generally holding to schedule.

Paper Demand Spotty in Indianapolis

[FROM OUR REGULAR CORRESPONDENT]

INDIANAPOLIS, Ind., July 21, 1930.—Paper demand in this territory continues to be spotted. Wrapping papers show a slight decline in sales volume and in Indianapolis the drop is somewhat more drastic than in other sections of the state. Most of the downtown Indianapolis merchants have placed a special charge on boxing and wrapping packages for gift purposes. This movement promises to spread to other sections of the state for officials of the merchants' association here are spreading the propaganda.

Building papers also are on the wane and little is expected before fall when the late building season sets in. The paper box factories report only a fair business and demand from them is only average and perhaps a little slower than this time last year. Demand for book and cover papers is not satisfactory, but appears to be a little better in proportion than most other papers. Tissues are steady in price, but demand is slowly sinking.

A little more activity is noticed in the paper stock market during the week. High grade waste papers are fairly active, but the prices are low and the local houses are loath to sell where they can find storage space that is satisfactory.

J. Atwood White Sr. Heads Moore & White Co.

PHILADELPHIA, Pa., July 21, 1930.—Owing to the sudden death of Shelton A. Hibbs, president of the Moore & White Company on July 14, 1930, the following changes in officers of the Company were put into effect at a special meeting of the board of directors held July 18, 1930, a quorum being present: J. Atwood White, Sr., president; J. Atwood White, Jr., assistant to president; James A. Currens, treasurer; Charles H. Prenzel, secretary and assistant treasurer, the other officers being—C. J. Kern, vice-president and chief engineer; William L. Nixon, vice-president and general manager.

The board of directors is as follows: J. Atwood White, Sr.; J. Atwood White, Jr., Deacon R. Taylor, Conrad J. Kern, William L. Nixon and George H. Thornley.

F. J. Sensenbrenner President of Spruce Falls

In a brief item in the issue of the PAPER TRADE JOURNAL of July 17, it was stated that E. S. Noble had been promoted to the position of president of the Spruce Falls Power and Paper Company, Ltd. This obviously was an error. F. J. Sensenbrenner has been and is president. J. C. Kimberly has been elected vice president, succeeding J. H. Black in that capacity, E. S. Noble has been appointed general manager, succeeding Mr. Black in that position, and George Barber has been elected treasurer, succeeding J. C. Kimberly.

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LIQUID CHLORIDE BELLE BRAND CAUSTIC SODA

Cylinders—Ton Tanks—Tank Cars
76%—Solid Liquid Flake

Arnold, Hoffman & Co. Inc. Sole Agents

PROVIDENCE BOSTON NEW YORK
PHILADELPHIA CHARLOTTE

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, July 23, 1930.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. The contract movement is well up to average. Prices remain unchanged. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¼ cents to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—The bleaching powder market is practically unchanged. Demand is only moderately active but shipments against contract are going forward in fair volume. Prices are steady. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in drums, at works.

CASEIN.—Trading in the casein market was light. Prices remain unchanged. Domestic standard ground is quoted at 13½ cents and finely ground at 15 cents per pound. Argentine standard ground is selling at 13½ cents and finely ground at 14½ cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Supplies of caustic soda are moving into consumption at a satisfactory pace. Prices are generally holding to schedule. Solid caustic soda is quoted at from $2.90 to $2.95, while the flake and the ground are selling at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—The china clay market is exhibiting a strong undertone. Contract shipments are moving in seasonal volume. Prices are steady. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is selling at from $8 to $13 per ton, at mine.

CHLORINE.—Some improvement was noticed in the demand for chlorine. The contract movement was fairly heavy. Prices are holding to previously recorded levels. Chlorine is quoted at from $2.40 to $2.45 per 100 pounds, in tanks, or multi-unit cars, in ton lots, or over, at works.

ROSIN.—The rosin market declined slightly. Demand was restricted. The grades of gum rosin used in the paper mills are offered at from $5.80 to $5.85 per 280 pounds, in barrels, at yard. Wood rosin is selling at from $5.00 to $5.10 per 280 pounds, in barrels, on dock.

SALT CAKE.—There were no radical changes reported in the salt cake market. Demand is fairly active. Prices are generally holding to schedule. Salt cake is still quoted at from $22 to $25 per ton, while chrome salt cake is selling at from $20 to $21 per ton, in bulk, at works.

SODA ASH.—Most of the business transacted in the soda ash market was along routine lines. Shipments against contract are going forward in fair volume. Prices remain unchanged. Contract quotations on soda ash, in car lots, at works, are as follows: in bags, $1.32½; in barrels, $1.55.

STARCH.—The starch market was rather quiet. Contract shipments are going forward to the paper mills at a fairly satisfactory pace. Prices remain unaltered. Special paper making starch is quoted at $3.72 per 100 pounds, in bags, and at $3.99 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Conditions in the sulphate of alumina market are satisfactory. The contract movement continues fairly heavy. Prices remain unchanged. Commercial grades are still quoted at from $1.40 to $1.55, and iron free at from $1.90 to $2.05 per 100 pounds, in barrels, at works.

SULPHUR.—The sulphur market is exhibiting a seasonal trend. Sulphur is still quoted at $18 per ton, at mine, on orders of 1,000 tons, or over, on yearly contracts, and at $20 per ton for any smaller quantity over that period. On spot and nearby car loads, the quotation is $21 per ton.

TALC.—Although demand for talc was light during the past week, the market is in a sound position. Prices are holding to schedule, in most instances. Domestic talc is quoted at from $16 to $18 per ton, at mine, while imported talc is selling at from $18 to $20 per ton, in bags, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00 @ 38.00
Bonds	9.00 @ 53.25
Writings—	
Extra Superfine	14.00 @ 32.00
Superfine	14.00 @ 32.00
Tub sized	10.00 @ 15.00
Engine sized	8.00 @ 11.00
Book, Cased—	
S. & S. C.	6.00 @ 7.50
M. F.	5.75 @ 7.00
Coated and Enamel	7.50 @ 12.00
Lithograph	7.50 @ 12.00
Tissues—Per Ream—	
White No. 1	.75 @ 1.00
Anti-Tarnish	1.35 @ 1.90
Colored	1.00 @ 2.00
White No. 2	.75 @ .80
Kraft	1.00 @ 1.10
Manila	.75 @ .80
Kraft—	
No. 1 Domestic	5.75 @ 6.25
No. 2 Domestic	3.75 @ 5.00
Southern	3.75 @ 4.75
Imported	5.50 @ 7.00
Manila—	
No. 1 Jute	9.00 @ 9.25
No. 2 Jute	7.75 @ 8.50
No. 1 Wood	4.75 @ 5.25
No. 2 Wood	4.00 @ 4.50
Butchers	3.75 @ 4.25
Fibre Papers—	
No. 1 Fibre	5.00 @ 5.50
No. 2 Fibre	4.75 @ 5.25
Common Bogus	2.75 @ 3.00
Screenings	3.00 @ 3.25
Card Middles	4.00 @ 5.00
Glassine—	
Bleached, basis 25 lbs.	13.00 @ 16.00
Bleached, basis 20 lbs.	15.00 @ 16.00

(Delivered New York)

News, per ton—	
Rolls, contract	62.00 @ —
Rolls, spot	62.00 @ —
Sheets	67.00 @ —
Side Runs	47.00 @ 52.00
Boards—per ton—	
News	37.50 @ —
Straw	50.00 @ —
Chip	35.00 @ —
Binders' Boards	65.00 @ 70.00
Wood Pulp	90.00 @ 95.00
65 Test Jute Liner	37.50 @ 40.00
85 Test Jute Liner	42.50 @ 45.00
Sgl. Mla. Ll. Chip	47.50 @ 50.00

Mechanical Pulp

(On Dock)

No. 1 Imported—	
Moist	28.00 @ 30.00
Dry	30.00 @ 32.00

(F. o. b. Mill)

No. 1 Domestic	26.00 @ 30.00

Chemical Pulp

(On Dock, Atlantic Ports)

Sulphite (Imported)—	
Bleached	3.00 @ 4.25
Easy Bleaching	2.70 @ 2.90
No. 1 strong unbleached	2.40 @ 2.65
Mitscherlich unbleached	2.50 @ 2.85
No. 2 strong unbleached	2.35 @ 2.50
No. 1 Kraft	1.65 @ 2.15
No. 2 Kraft	1.55 @ 1.85
Sulphate—	
Bleached	3.40 @ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—	
Bleached	3.00 @ 4.75
Easy Bleaching Sulphite	2.55 @ 2.85
News Sulphite	2.35 @ 2.60
Mitscherlich	3.00 @ 3.25
Kraft (Domestic)	2.10 @ 3.30
Soda Bleached	2.90 @ 3.20

Domestic Rags

New Rags

(Prices to Mill f. o. b N. Y.)

Shirt Cuttings—	
New White, No. 1	9.00 @ 9.50
New White, No. 2	7.00 @ 7.50
Silesias No. 1	7.25 @ 7.50
New Unbleached	10.00 @ 10.50
New Blue Prints	5.25 @ 5.50
New Soft Blacks	5.25 @ 5.75
Blue Overall	7.00 @ 7.50
Washables	4.50 @ 5.00
Fancy	5.25 @ 5.75
Mixed Khaki Cuttings	4.75 @ 5.25
Pink Corset Cuttings	8.00 @ 8.50
O D. Khaki Cuttings	5.15 @ 5.75
Men's Corduroy	3.75 @ 4.25
New Mixed Blacks	3.50 @ 3.75

Old Rags

White, No. 1—	
Repacked	5.50 @ 6.00
Miscellaneous	4.50 @ 5.00
White, No. 2—	
Repacked	3.00 @ 3.50
Miscellaneous	2.50 @ 2.75
St. Soiled, White	2.00 @ 2.15
Thirds and Blues—	
Repacked	2.25 @ 2.50
Miscellaneous	1.75 @ 2.00
Black Stockings	3.25 @ 3.75
Roofing Rags—	
Cloth Strippings	1.50 @ 1.60
No. 1	1.50 @ 1.60
No. 2	1.15 @ 1.25
No. 3	1.10 @ 1.20
No. 4	1.00 @ 1.10
No. 5A	.90 @ 1.05

Foreign Rags

New Rags

New Dark Cuttings	2.50 @ 3.00
New Mixed Cuttings	2.75 @ 3.25
New Light Silesias	7.00 @ 7.50
Light Flannelettes	7.25 @ 7.75
Unbleached Cuttings	9.75 @ 10.25
New White Cuttings	9.00 @ 9.50
New Light Oxfords	7.00 @ 7.50
New Light Prints	5.25 @ 5.75

Old Rags

No. 1 White Linens	7.25 @ 8.00
No. 2 White Linens	5.75 @ 6.75
No. 3 White Linens	4.75 @ 5.25
No. 4 White Linens	3.00 @ 3.50
No. 1 White Cotton	5.50 @ 6.50
No. 2 White Cotton	2.75 @ 3.75
No. 3 White Cotton	3.00 @ 4.00
No. 4 White Cotton	1.95 @ 2.15
Extra Light Prints	2.75 @ 3.00
Ord. Light Prints	2.25 @ 2.50
Med. Light Prints	1.95 @ 2.10
Dutch Blue Cottons	2.15 @ 2.30
French Blue Linens	2.65 @ 2.75
German Blue Linens	2.30 @ 2.50
German Blue Cottons	2.00 @ 2.10
Checks and Blues	1.85 @ 2.00
Lindsay Garments	1.60 @ 1.70
Dark Cottons	1.15 @ 1.25
Old Shopperies	1.10 @ 1.20
New Shopperies	1.20 @ 1.25
French Blues	2.00 @ 2.10

Old Rope and Bagging

(Prices to Mill f. o.b. N. Y.)

Gunny No. 1—	
Foreign	1.65 @ 1.75
Domestic	1.65 @ 1.75
Wool Tares, light	1.60 @ 1.65
Wool Tares, Heavy	1.60 @ 1.70
Bright Bagging	1.60 @ 1.70
Small Mixed Rope	1.25 @ 1.40
Manila Rope—	
Foreign	3.25 @ 3.40
Domestic	3.50 @ 3.75
New Burlap Cut	2.50 @ 2.75
Hessian Jute Threads—	
Foreign	3.50 @ 4.00
Domestic	3.25 @ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—	
Hard, white, No. 1	3.00 @ 3.25
Hard, white, No. 2	2.40 @ 2.55
Soft, white, No. 1	2.65 @ 2.75
White envelope cuttings	2.90 @ 3.10
Flat Stock—	
Stitchless	1.40 @ 1.50
Overissue Mag.	1.40 @ 1.50
Solid Flat Book	1.30 @ 1.40
Crumpled No. 1	1.00 @ 1.10
Solid Book Ledger	2.00 @ 2.10
Ledger Stock	1.30 @ 1.40
New B. B. Chips	.35 @ .45
Manilas—	
New Env. Cut.	2.40 @ 2.60
New Cuttings	1.50 @ 1.75
Extra No. 1 old	1.25 @ 1.35
Print	.60 @ .65
Bogus Wrapper	.60 @ .65
Container	.40 @ .50
Old Kraft Machine—	
Compressed bales	1.50 @ 1.60
News—	
No. 1 White News	1.77 @ 1.87
Strictly Overissue	.50 @ .55
Strictly Folded	.40 @ .45
No. 1 Mixed Paper	.22 @ .27
Common Paper	.15 @ .20

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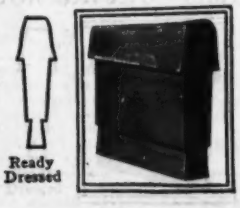

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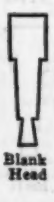

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Twines
(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrappings, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.25
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished India—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Amer. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

Paper
(F. o. b. Mill)

Rag Bond	.30	@	.53¼
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¾	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¾	@	.06¼
No. 1 S.&S.C. Book	.06¾	@	.07¾
No. 2 S.&S.C. Book	.05¾	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
No. 1 Manila	.04¾	@	.05¾
No. 1 Fibre	.04¾	@	.05¾
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	5.00	@	5.50
Southern Kraft	3.75	@	4.00
No. 2 Kraft	3.75	@	4.00
Wood Tag Boards	.04¾	@	.06¼
Sulphite Sreenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
(Delivered Central Territory)			
News, per ton—			
Rolls, contract	62.00	@	—
Sheets	67.00	@	—
Boards, per ton—			
Plain Chip	37.50	@	42.50
Solid News	47.50	@	—
Solid News	40.00	@	45.00
Manila Lined Chip	50.00	@	55.00
Container Lined—			
85 Test	65.00	@	70.00
100 Test	—	@	—

Old Papers
(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.40
White Env. Cut-			
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	.30	@	.35
No. 2 Mixed	.25	@	.35
Ledger & Writings	1.25	@	1.35
Solid Books	1.05	@	1.10
Blanks	1.60	@	1.65
Krafts	1.30	@	1.40
New Kraft Cuts	1.50	@	1.70
Manila Envelope Cuttings	1.65	@	1.70
Ex. No. 1 Manila	1.30	@	1.45
Print Manila	.45	@	.50
Folded News (over-issue	.40	@	.45
Old Newspapers—			
No. 1	.35	@	.40
No. 2	.30	@	.35
Mixed Papers—			
No. 1	.30	@	.35
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper
(F. o. b. Mill)

Bonds	.05	@	.40
Ledgers	.08	@	.40
Writings—			
Superfine	.12½	@	.18
Extra fine	.18	@	.22
Fine	.17	@	.26
Fine, No. 2	.15	@	.25
Fine, No. 3	.09	@	.20
Book, M. F.	.05	@	.07
Book, S. S. & C.	.05	@	.07½
Book, Coated	.09	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
No. 1 Jute Manila	.07	@	.09
Manila Sul., No. 1	.04	@	.05½
Manila No. 2	.03	@	.04
No. 1 Kraft	.05¼	@	.06¾
No. 2 Kraft	.03¾	@	.04¼
Southern Kraft No. 1	—	@	.03¾
Southern Kraft No. 2	—	@	.03¼
Common Bogus	.03½	@	.04
(Delivered Philadelphia)			
News Print Rolls	62.00	@	—
Straw Board	52.50	@	70.00
News Board	37.50	@	38.50
Chip Board	32.50	@	35.00
Wood Pulp Board	85.00	@	95.00
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	55.50	@	57.00
Slaters (per roll)	.84	@	.94
Best Tarred, 1-ply (per roll)	1.95	@	2.10
Best Tarred, 2-ply (per roll)	1.50	@	1.60
Best Tarred, 3-ply	2.00	@	2.25

Domestic Rags (New)
(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	.10½	@	.11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.07	@	.09
Black Silesia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
Fancy	.05½	@	.06
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¾	@	.04½

Bagging
(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers
(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	2.65	@	2.75
No. 2 Hard White	2.30	@	2.50
No. 1 Soft White	2.25	@	2.50
No. 2 Soft White	1.40	@	1.60
No. 1 Mixed	.90	@	1.00
No. 2, Mixed	.60	@	.70
Solid Ledger Stock	1.55	@	1.65
Writing Paper	1.05	@	1.25
No. 1 Books, heavy	1.00	@	1.20
No. 2 Books, light	.90	@	1.00
No. 1 New Manila	2.15	@	2.30
No. 1 Old Manila	1.50	@	1.60
Print Manila	.50	@	.60
Container Manila	.45	@	.50
Old Kraft	1.35	@	1.40
Common Paper	.25	@	.35
No. 1 Mixed Paper	.25	@	.30
Straw Board, Chip	.35	@	.40
Binders Board, Chip	.35	@	.45
Corrugated Board	.50	@	.60
Overissue News	.45	@	.50
Old Newspaper	.25	@	.30

Domestic Rags (Old)

White No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
M. G.	6.00	@	—
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Roofing Stock—			
Foreign No. 1	1.25	@	1.30
Repacked	.80	@	.90
No. 2	.70	@	.75
No. 3 (Roofing)	.30	@	.40
No. 4	.30	@	.40
No. 5A	.70	@	.75
B	.40	@	.60
C	.25	@	.30

BOSTON

Paper
(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.12½
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.06½	@	.20
Superfines	.11	@	.31
Book, Super	.06	@	.09
Book, M. F.	.05½	@	.08½
Book, Coated	.08½	@	.18
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.04¾	@	.06
No. 2 Kraft	.03¾	@	.05
(Less car-freight to Boston)			
Southern Kraft	.03¾	@	.04¼
(F. o. b. destination in carload lots, f. o. b. mill in less than carload lots.)			
Common Bogus	.02	@	.02¾
Delivered New England points			
News Print Rolls	61.50	@	—
Straw Boards, rolls	.009		52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	52.50
Single White, Patent Coated Newsboard Bender	65.00	@	80.00
Wood Pulp Board	75.00	@	80.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers
(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.50	@	2.60
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	—	@	2.25
No. 1 Books, Heavy	1.30	@	—
No. 1 Books, Light	1.05	@	—
Manila Env. Cuttings	2.00	@	2.25
No. 1 Old Manila	.90	@	1.00
White Blank News	1.50	@	1.60
Old Kraft	1.35	@	1.45
Print Manila	.75	@	.80
No. 1 Mixed Paper	.20	@	—
Overissue News	.40	@	.50
Old Newspapers	.35	@	.40
Box Board, Chip	.45	@	.50
Corrugated Boxes	—	@	.40

Bagging
(F. o. b. Boston)

Gunny No. 1—			
Foreign	1.50	@	1.65
Domestic	1.50	@	—
Manila Rope—			
Foreign	—	@	3.00
Domestic	3.50	@	—
Transmission Rope	2.25	@	2.40
Mixed Strings	.90	@	1.00
Jute Wool Strings	.90	@	1.00
Jute Carpet Threads	1.05	@	1.15
Scrap Burlaps	1.25	@	1.40
Scrap Sisal	1.50	@	1.75
Scrap Sisal for shredding	1.75	@	2.00
Wool Tares, heavy	1.60	@	—
New Burlap Cutting	1.75	@	2.00
Australian Wool Pouches	2.50	@	3.00

Domestic Rags (New)
(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.08	@	.08½
Silesias No. 1	.06	@	.06¾
New Unbleached	—	@	.09¼
Fancy	.04	@	.04½
Washable	.04	@	.04½
Cottons—According to grades			
Blue Overalls	.06¾	@	.06¾
New Black, soft	.04	@	.04¼
Khaki Cuttings	.04	@	.04¾
O. D. Khaki	.05	@	—
Corduroy	.03	@	.03¼
New Canvas	.08	@	.08½

Domestic Rags (Old)
(F. o. b. Boston)

Canvas	.04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	5.00	@	—
White No. 2—			
Repacked	.04½	@	.05
Miscellaneous	.03½	@	.04
Twos and Blues	2.75	@	3.00
Thirds and Blues—			
Repacked	2.25	@	2.50
Miscellaneous	1.75	@	1.90
Black Stockings	—	@	4.00
Roofing Stock—			
No. 1	1.25	@	1.50
No. 2	.90	@	1.00
No. 3	.85	@	.90
No. 4	.75	@	.85

Foreign Rags
(F. o. b. Boston)

Dark Cottons	.85	@	.95
New No. 1 Shirt Cuttings	8.50	@	9.00
Dutch Blues	2.00	@	2.12½
Lace Curtains	4.50	@	4.75
New Checks & Blues	4.25	@	4.60
Old Fustians	1.90	@	2.00
Old Linsey Garments	1.20	@	—

TORONTO

Paper
(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¾	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¾	@	—
Ledgers (sulphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	.09½	@	.10
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	10.00	@	11.50
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.00	@	—
No. 1 Manila	5.40	@	—
Fiber	5.40	@	—
Kraft, M. F.	5.90	@	—
White, No. 2	2.00	@	2.25

(Delivered Toronto)

News, per ton—			
Rolls (contract)	61.50	@	62.00
Sheets	67.00	@	—

Pulp
(F. o. b. Mill)

Ground Wood	30.00	@	32.00
Sulphite easy bleaching	60.00	@	—
Sulphite news grade	60.00	@	—
Sulphite, bleached	72.50	@	75.00
Sulphate	60.00	@	—

Old Waste Paper
(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writ-			
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	.85	@	—
Strictly Folded	.85	@	—
No. 1 Mixed Paper	.65	@	—

Domestic Rags
(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	.09¾	@	.10
Fancy Shirt Cuttings	.06	@	.06¼

Advertising matter paged consecutively with text, has been removed here to lessen the bulk of this volume.

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PAPER TRADE JOURNAL

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